EWMA Journal

Dear Participant

Welcome to the 20th Conference of
the European Wound Management Association,
which is held in cooperation with the
Swiss Association for Wound Care (SAfW)
– the Swiss German Section and the Swiss French Section.

The theme this year is:

GET THE TIMING RIGHT

The conference is the largest international event within wound management and wound healing in Europe. This year's conference will deal with many of the central issues in wound management. One of the important ones is evidence, outcomes and implementation – proposing for a way forward.

As a European and multidisciplinary association, EWMA gathers people from many different countries and areas of expertise. Consequently, many view points on how to organise wound management and who to involve will be represented at the conference.

This year, the interest in presenting at the EWMA conference has also been very high and more than 500 scientific presentations will be given during the conference either as key lectures, free papers or posters. We are very pleased that you have chosen to join our associations.

We hope the scientific programme will increase your knowledge, improve your future clinical work and that you will take the opportunity to network at the conference.

Enjoy your stay in Geneva

Sue Bale, *Recorder EWMA*
Zena Moore, *President EWMA*
Hubert Vuagnat, *President SAfW – French section*
Severin Läuchli, *President SAfW – German section*

EWMA2010
26-28 MAY · GENEVA
WWW.EWMA2010.ORG

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Speakers: Th. Eberlein (Algaida/Spain), O. Alvarez (New York/USA)

May 26th, 12:45 – 13:30, room B

"Wound at risk and its treatment" – View of the Clinical Microbiologist, Infectious Disease Physician and Clinician –

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EWMA Journal is published three times a year – in January, May and October.

Manuscripts will be accepted from any country and should normally be submitted in English (contact the editor for guidance regarding this). Manuscripts will be subject to peer-review and copy-editing before publication.

Read the author guidelines for the EWMA Journal at www.ewma.org/english/ewma-journal/author-guidelines.html

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The EWMA Position Documents are available in English, French, German, Italian and Spanish, and can be downloaded from **www.ewma.org**

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Please note that the EWMA Position Documents express the view of EWMA at the time for publication of the document.

Future EWMA guidance documents

In May 2010 the following EWMA Document will be published: *Outcomes in controlled and comparative studies on non healing wounds – Recommendations to improve quality of evidence in wound management*. This document is written by members of the EWMA Patient Outcome Group, based on common discussions in the group.

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EWMA actively supports the improvement and development of clinical practice within wound management in Europe.

As a member of EWMA you will have a direct influence on this development. Further, as a EWMA member you can vote and, after 1 year's membership, you can stand for election to the EWMA Council, which will give you further influence on the future development of wound management in Europe.

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- You make a difference in clinical practice within wound management in Europe
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- EWMA news and statements send directly to you
- A discount on your registration fee for EWMA Conferences
- Right to apply for EWMA travel grants
- Right to vote and stand for EWMA Council

About EWMA

The European Wound Management Association (EWMA) was founded in 1991 to address clinical and scientific issues associated with wound management; represented by medical, nursing, scientific and pharmaceutical interests.

EWMA is an umbrella organisation linking wound management associations across Europe. EWMA is also a multidisciplinary group bringing together individuals and organisations interested in wound care.

EWMA primarily reaches its objectives by being an educational resource providing travel grants for novice practitioners (for educational purposes), conferences, information and publications on all aspects of wound care.

Objectives

1. To promote the advancement of education and research into epidemiology, pathology, diagnosis, prevention and management of wounds of all aetiologies.
2. To arrange conferences on aspects of wound management throughout Europe.
3. To arrange multi-centre, multi-disciplinary training courses on topical aspects of wound healing.
4. To create a forum for networking for all individuals and organisations interested in wound management

These objectives are mainly achieved through the 42 Cooperating Organisations (national wound management associations in Europe) of EWMA, the EWMA Education initiatives, the EWMA projects and the EWMA conferences. EWMA is the largest wound management association in Europe and the annual EWMA Conferences attract 1500-2500 participants.

Please register as a EWMA member at WWW.EWMA.ORG

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- Orthopaedic surgery
- Infection
- Revascularisation
- Uraemia
- Wound healing/outcome

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About EWMA

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EWMA is an umbrella organisation linking wound management associations across Europe and a multidisciplinary group bringing together individuals and organisations interested in wound management.

EWMA works to reach its objectives by being an educational resource, holding conferences, supporting/carrying out international projects related to wound management, actively supporting the implementation of existing knowledge within wound management, providing information and publications on all aspects of wound management.

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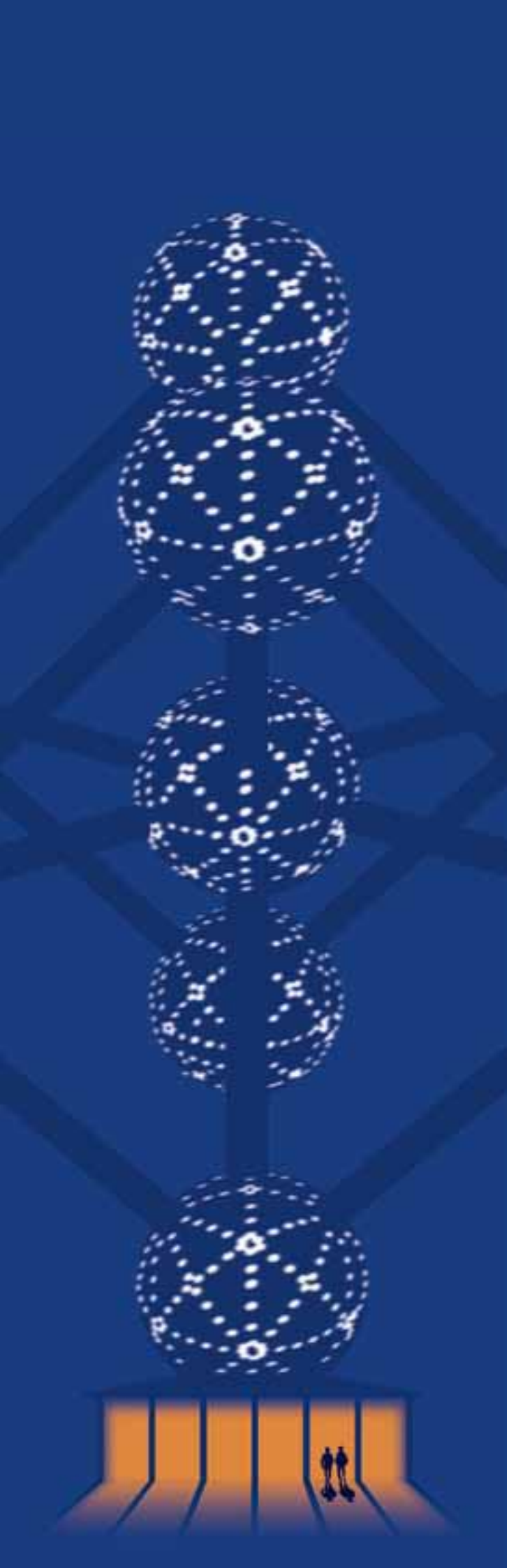

21st Conference of the European Wound Management Association

21e Conferentie van de Europese Wound Management Association

21 Congrès de l'Association Européenne de Soins de Plaies

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CNC Wound Management Association

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ORAL PRESENTATIONS

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Evidence, outcomes and implementation in wound management: proposals for a way forward

1

WHY IS EWMA INTERESTED IN IMPLEMENTATION?

Zena Moore[1].

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Wounds and their associated problems have challenged practitioners for centuries, despite this longevity, neither the prevalence nor incidence of wounds is reducing. If one could use the example for the work of Winter, as the birth of modern wound management, it forms a basis for reflection and consideration of where we are, how we got here and where we would like to be. Since the work of Winter in the early 1960's, there has been an enormous growth in the number of new wound technologies available, in tandem with this has also been a significant development in education and training in this arena. This suggests that as practitioners we should be in an ideal position to always provide effective, efficient wound management to all our patients. The reality is somewhat different, however, with many barriers in existence, which challenge our wound management practices.

It is based on this premise that EWMA began to explore the reasons why the knowledge and technologies available are not always implemented into the clinical arena. The underlying premise being, that we know the problems and in many cases also know the solutions, but somehow there is often a large gap between theory and the daily practice of wound management. Fundamentally, investment in research and development and in educational strategies is fruitless if they are not implemented into clinical practice. Therein lies a significant challenge, can we agree on the exact endpoints which are important in determining efficacy and efficiency, further, can we all agree on the ideal methods for implementing best practice, and in doing so, agree on the appropriate outcome measures, at a European and wider International level?

This presentation will explore why EWMA is interested in implementation and will, in doing so, provide some interesting food for thought, which we may all reflect upon and consider in our daily practice of wound management.

Evidence, outcomes and implementation in wound management: proposals for a way forward

2-4

OUTCOMES IN CONTROLLED AND COMPARATIVE STUDIES ON NON HEALING WOUNDS – RECOMMENDATIONS TO IMPROVE QUALITY OF EVIDENCE IN WOUND MANAGEMENT

A EWMA PATIENT OUTCOME GROUP DOCUMENT

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The accepted way to assess effectiveness and quality in health care is evidence-based practice (EBP), which focus on the use of current best evidence in decision making concerning wound care patients. The question is which type of intervention, technology and dressing materials are the best.

In the wound area recent reviews have shown little or no convincing evidence of significant difference in time to healing or percent healing between wound technologies and treatment products.

With this background EWMA established the EWMA Patient Outcome Group in 2008. The group includes clinical experts from different European countries and members from regulatory departments of industrial companies in wound care.

Members of the EWMA Patient Outcome Group propose that outcome of wound treatment is the central issue to be revised in relation to the clinical data collection within wound management. Outcome parameters like quality of life, infection rate, cost effectiveness are therefore discussed as an important addition to wound healing.

This presentation focus on the first publication from the group, presenting an outline of the challenges related to evidence in wound care and a definition of meaningful evidence/outcomes usable from the clinical point of view. The group look for the highest possible standards that will help solve clinical challenges in relation to the testing of medical device products and treatment structures for different types of problem/chronic wounds.

5

PROSPECTIVE, RANDOMIZED, CONTROLLED, MULTI-CENTER CLINICAL TRIAL OF A BIOCELLULOSE WOUND DRESSING FOR THE TREATMENT OF VENOUS ULCERS

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Objectives: To Evaluate the safety and efficacy a biocellulose wound dressing (BWD) produced from microbial cellulose (Acetobacter Xylinium) in the treatment of venous ulcers.

Design: Prospective, randomized, controlled study.

Setting: Multicenter Study in the outpatient setting.

Intervention: Each patient with a venous ulcer received either standard care (non-adherent dressing plus compression therapy) or BWD plus compression therapy. Wounds were evaluated for fibrinolysis (autolytic debridement), pain, healing rate, time to 75% complete granulation and time to 50% re-epithelialization.

Outcomes: The study was completed as planned in 48 randomized patients.

Results: Treatment with BWD plus compression was more effective than standard care in fibrinolysis (83% vs. 26%; p=0.0001), wound pain (i.e.week-7, 100% of the subjects treated with BWD reported no pain compared to 63% in the standard care group, p=0<0.05). Time to 75% granulation was 25 days for the BWD-treated group vs. 36 days for the control-treated group. Time to 50% re-epithelialization was 36 days for the BWD-treated group vs. 50 days for the control-treated group.

Conclusions: Fibrinolysis was significantly greater in the BWD-treated group leading to exposed wound margins and cleaner wound bed. The BWD-treated group reported significantly less wound pain than the group treated with standard care. The time to granulation was 69% less, and the rate of wound healing was 43% greater in the BWD treated group

BWD = Suprasorb X, Lohmann & Rauscher GmbH, Rengsdorf, Germany

6

THE THREE BASIC COMPONENTS FOR THE SUCCESSFUL TREATMENT OF VENOUS ULCERS

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Purpose: Reduce the recovery time of venous ulcers by a parallel application of basic components from the Good Medical Practice published in 2007.

Methods: 29 venous ulcers in 25 patients were examined and treated based on a protocol designed in advance; 16 had varicose veins and superficial venous reflux and 9 suffered from post thrombotic syndrome. Patients with comorbidities (diabetes, heart failure, arteriopathy) were excluded from the study. The diagnosis includes an Echo Doppler, pay measurement and microbiological analysis. The treatment is carried out in three principal components: all 25 patients were under local wound treatment and elastic compression; and 16 had surgical intervention for reflux (ablation of the large saphena by radio frequency or stripping).

Results: Practicing the combination of 3 basic methods, a rapid involution of the wound surfaces is observed within the first weeks. In all 16 patients operated, the wounds were reduced 50% during the first 7 postoperative days and were completely closed in the 4th week. In the 9 unoperated patients, epithelization occurred more slowly, but was fully healed in 8 weeks. One ulcer was not able to be closed.

Conclusions: The three basic methods employed simultaneously: local wound treatment, compression and reflux surgery display a rapid success in the epithelization of venous ulcers.

Leg Ulcer 1

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METAANALYSIS ABOUT THE ETIOLOGY OF 36606 PATIENTS WITH CHRONIC LEG ULCERS IN GERMANY

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Introduction: The etiology of chronic leg ulcers is very heterogeneous. Even if the prevalence and incidence of chronic leg ulcers seem to increase in Europe data on these patients are insufficient available only. Therefore the aim of this study was determine the etiologic spectrum of chronic leg ulcers in Germany.

Materials and Methods: We compared the results of three own clinical investigations regarding the diagnosed etiology of patients with chronic leg ulcers in Germany. Different populations of experts were asked to complete a standardized questionnaire. Moreover we objectified the etiology in patients from our own wound-centre.

Results: We were able to analyze the data of 36606 patients with chronic leg ulcers. As expected vascular diseases were the most important causes. But beside venous and arterial insufficiency especially different types of vasculitis demonstrate to be a relevant factor. Altogether we identified 12 different etiologies like pyoderma gangrenosum, infection, neoplasia or calciphylaxis. In 20% of all patients no venous or arterial etiology could be found so that rare causes are in summation are not as rare as expected. But we found distinct differences in the diagnosed etiologies of leg ulcers regarding the profession of the asked experts groups.

Conclusion: Even if our results are probably not representative for Europe, we analyzed with 36606 patients the greatest population with chronic leg ulcers in Germany. Our results demonstrate that beside venous and arterial insufficiencies there exist a lot of other potential relevant etiologies.

Leg Ulcer 1

8

RETROSPECTIVE ANALYSIS OF SEROLOGIC PARAMETERS OF 50 PATIENTS DUE TO VASCULITIS: HOW MUCH DIAGNOSTIC IS MEANINGFUL?

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In 5-10% of all patients with a chronic leg ulcer this is caused by a vasculitis. That means that, according to the current literature, vasculitic diseases represent the most often diagnosed aetiology after chronic venous insufficiency and peripheral obstructive arterial disease. Beside the primary vasculitis the causes of the more often secondary vasculitis are frequently infectious diseases, drugs, autoimmune diseases or neoplasia. In addition to the clinical and histological diagnostics, an extensive serological diagnostics represent an important parameter in the gold standard of vasculitic diagnostics. Despite this expensive diagnostics in most patients it is not possible to identify specific factors. That leads to our central question - how much diagnostic is meaningful?

In our retrospective study we evaluated the serological parameters of 50 patients with a chronic leg ulcer due to a vasculitis. The results showed an increase of the inflammation parameters like C-reactive-protein in 80% a fibrinogen in 69% of all patients. Numerous additional examined serological parameters as for example auto-antibodies, clotting system, immunoglobulines or serum electrophoreses showed altogether an unspecific variance without signs for associated factors.

The results of our study demonstrate that beside the clinical and histological findings the large quantity of serological parameters is not able to diagnose other associated factors. Therefore the serological diagnostic should be restricted to the individual clinical symptoms.

9

THE INFLUENCE OF PHYSICAL ACTIVITY ON ANKLE JOINT MOBILITY IN PATIENTS WITH VENOUS LEG ULCER

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The aim of the study was to assess the influence of physical activities on ankle joint mobility in patients suffering from venous leg ulcer.

Material and Methods: 48 patients participated in this study. There were 32 patients suffering from venous ulceration and 16 healthy people who constituted a control group. The patients with ulceration were randomized to 2 groups - 16 to the group which consist of broaden physical activity program and bike exercise program. Another 16 patients performed a basic physical activities program. The range of ankle joint mobility was assessed by measurement of foot dorsiflexion and plantar flexion. The 32 cm goniometer was used with a scale from 0°to180° and accuracy to 1°.

Results: Patients suffering from ulcers were characterized by substantially lower mobility of ankle joint both in dorsiflexion ($p<0.01$), and plantar flexion ($p<0.01$). The ankle joint mobility was negatively correlated with ulceration surface, extent of lipodermatosclerosis and a value of CEAP score. Among the group of patients with ulcers, the increase of ankle joint mobility was observed. The bigger improvement of dorsiflexion and plantar flexion was observed in patients performing expanded physical activities program ($p<0.05$).

Conclusion: Systematic physical activities of foot joints significantly increase the range of ankle joint mobility in patients with venous ulcers. The exercises performed by patients at home are effective, however the bigger advantages are benefited by systematic training on rehabilitation bike.

10

ADHERENCE TO LEG ULCER TREATMENT: DEVELOPMENT OF A THEORETICAL FRAMEWORK BASED ON A QUALITATIVE STUDY

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Aim: Exploring processes underlying (non-)adherent behaviour in leg ulcer patients

Methods: Twenty-six leg ulcer patients received an intervention to enhance adherence with compression, leg exercises, physical activity and leg elevation. Five tissue viability nurses carried out the intervention in individual sessions at home.

A qualitative study was conducted in a homecare setting. Interviews were held with patients after completion of the intervention. Data were also collected by participant observation. Data collection and analysis took place iteratively. Analysis was validated by means of researcher triangulation.

Results: Trust in the nurse was central in adherence. Patients who experienced a trusting relationship with the nurse seemed to adhere. Trust was facilitated when nurses took time to talk with the patient, went the extra mile, took time for wound care and gave attention to pain and other problems. Even though patients did not know or were not convinced of the benefits of the advice, they were prepared to follow it because they trusted the nurse. Perceived physical improvements or sensations after following lifestyle advice convinced patients of the importance of the advice in which they did not believe at first.

Self-efficacy for performing leg exercises was higher than self-efficacy for being physical active and leg elevation. Physical impediments, co morbidities, and socio-structural impediments influenced the patient's ability to adhere to leg ulcer advice.

Conclusion: Interpersonal aspects between patients and nurses permeate adherence with leg ulcer treatment in different ways. Nurses should integrate nurse-related factors in adherence-promoting interventions.

Leg Ulcer 1

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CONTINUOUS STREAMING OF PAPAIN SOLUTIONS FOR THE DEBRIDEMENT OF VENOUS LEG ULCERS

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Aim: The growing numbers of chronic ulcers present huge challenge to currently employed treatments. There is an urgent need in a new effective, user-friendly treatment modality for the home-care settings. Here we report results demonstrating feasibility, safety and preliminary efficacy of a new modality of chronic wound debridement: continuous streaming of proteolytic enzyme solution.

Methods: Continuous streaming of solutions was affected by gravity from a feeding reservoir onto ulcers occluded within disposable device, simultaneously affecting mild negative pressure. Used solutions were collected in disposable collecting-bag. A multi-centered, double-blinded, Phase I/II randomised controlled trial was launched to test the safety and preliminary efficacy of increasing concentrations of papain in the streamed solutions for venous ulcers debridement. Patients were treated with 5-consecutive daily 6hrs-streaming sessions, followed by standard changes of wet dressings throughout a 3months follow-up period. Streaming of same solution devoid of enzyme served as control.

Results: 48 patients were enrolled, 36 were treated with enzyme containing solutions and 12 with solutions devoid of enzyme. Patients treated with enzyme containing solutions experienced debridement with exposure of 50-70% of wound area as granulation tissue vs exposure of 30% for the control group. 50% of enzyme debrided wounds exhibited spontaneous wound-closure or >75% wound size reduction within 2-7 weeks post treatment.

Conclusions: Our results indicate that continuous streaming of proteolytic enzyme solution is a safe and effective modality for wound debridement, applicable at the outpatient clinic, nursing-home and homecare settings.

Diabetic Foot 1

12

CARACTERIZATION OF THE DIABETIC ULCER IN THE PORTUGUESE POPUTATION – A PREVALENCE STUDY

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Aim: DFU is a major public health concern in Portugal, as well as worldwide. It is estimate that more than 50000 diabetic patients suffers from some kind of ulcer on their feet, leading to high economic and human cost.

Methods: This was a prevalence study, exploratory, open, multicenter, that evolved Portugal Continental and Islands (Azores), were it was made a distribution of a survey to all the volunteers to fill in and return them to GAIF. The survey started on the 31 January 2009 closing the 30 April 2009.

Results: There were 268 patients, 63,8% were male, with a mean age of 65 yrs (+SD 13,3), 16 yrs of DM evolution (+SD 10,42) and the last value of HgA was 8,28 (+SD 1,99). 57,8% were retired, 81,3% had DM type II, 73,1% said that felt unavailable to walk, 58,6% presented a neuropathic foot.

Classifiying the foot, 38,4% were classified as B,, with a time of evolution of 8,28 months (+SD 23,06), were referenced to other type of care, been the most named the hospital (74,6%), with a statistical significance ($p < 0.05$) on the presence of callus on the neuropathic foot.

Conclusion: It still a long way to go on the management of the DFU, but we do believe that the way start in knowing the enemy preferences and investing in preventing the most prevalent places it afflicts.

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PRE-MAUFACTURED SILICONE SOCKS IS A SAFE AND EFFECTIVE TREATMENT OF DRY SKIN AND FISSURES IN PATIENTS WITH DIABETIC NEUORPATHY

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Aim: Fissures are a complication of dry neuropathic skin. Regular application of emollient helps to prevent fissures, but compliance is usually poor. Individually manufactured silicone socks are useful in treatment of dry skin, but to a high cost. The aim of this study was to evaluate compliance, effectiveness and safety of pre-manufactured silicone socks.

Method: Wooden lasts with standardized measures was used, each size have three circumferential sizes. A thin silicon sheet was draped over the last by hand, and results in a seamless silicon sock. Air was evacuated, followed by a hardening time of 10 hours. During 2008, 40 persons with diabetes mellitus were fitted with silicone socks.

Results: 34 patients were included in a retrospective chart- and questionnaire study. 25 (74%) patients answered the questionnaire. Of these 3 had never used their delivered socks. 91% of our patients used their socks when sleeping and 22% at daytime. On a VA-scale patients estimated their clinical problem to 88 (78-99) (median (25-75%)) before and to 34 (15-46) after treatment (p<0,01). The effectiveness was estimated to 93 (91-100). Of the patients using silicone socks at daytime one developed an ulcer and one blisters. No AE was seen in night-users.

Conclusion: Pre-manufactured silicone socks improve skin moisture and prevent development of fissures. Patient compliance is good. Pre-manufactured silicone socks should preferably be used when sleeping to prevent ulcers and blisters.

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THE IMPACT OF NON-TRAUMATIC LOWER EXTREMITY AMPUTATIONS (LEA) ON PATIENTS: A TEN-YEAR RETROSPECTIVE STUDY AT A TERTIARY CARE HOSPITAL IN CANADA

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A retrospective study was conducted at one Canadian tertiary centre reviewing below-knee amputations (BKAs) and above knee amputations (AKAs) performed from 1998 to 2007. Demographics, co-morbidity and mortality data were collected from patients' medical records. Univariate and multivariable Cox regressions were used to determine significant co-morbidities associated with mortality (hazard ratio-HR) controlling for the effect of other co-morbidities. Kaplan-Meier survival analysis was used to compare mortality difference between AKA and BKA patients (HR).

A total of 466 non-traumatic LEAs (239 AKAs and 227 BKAs) were performed on 408 patients. Overall, mortality rate was 23.8%. 67.6% of the amputees were male. 72.6% were smokers. Mean age at amputation was 66.9 ±12.3 years. Major co-morbidities included peripheral vascular disease, gangrene, hypertension and diabetes (p<0.05). Significant co-morbidities associated with mortality were: age in ten years (p<0.001), sepsis, renal failure (p<0.01) and coronary artery disease (p<0.05). The mortality HR of AKA patients was 1.77 times that of BKA patients (p<0.01).

Post-amputation mortality rate is high, with AKA patients faring worse. While not all limbs can be saved from amputation, the decision to amputate carries a significant mortality risk, demanding treatment of infection, and management of renal and cardiac disease. Tertiary prevention through early recognition and intensive management of ischemia, ulceration, local infection and lifestyle modification such as smoking is paramount.

Diabetic Foot 1

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EVALUATION OF THE EFFICACY AND TOLERANCE OF A DRESSING IMPREGNATED WITH NOSF (NANO-OLIGOSACCHARIDE FACTOR), IN THE LOCAL MANAGEMENT OF DIABETIC FOOT ULCERS

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Aim: The occurrence of foot ulcer in diabetic patients results from the combination of neuropathic and arterial disease affecting their lower limbs.

Locally, the healing potential of these wounds is also compromised because of a high level of proteolytic activity (particularly of Metalloproteinases).

NOSF (Nano-OligoSaccharide Factor) is an innovative compound, which can promote the healing process of chronic wounds (already documented in leg ulcers), mainly by acting on the inhibition of Matrix MetalloProteinases.

Consequently, a multicentre pilot study has been conducted to assess the efficacy and tolerance of NOSF in the local management of diabetic foot ulcers.

Methods: 33 patients (mean duration of diabetes disease 17 years), presenting a Grade 1A (Texas classification) neuropathic foot ulcer (MNSI > 3) were included and followed up twice per month for a period of 12 weeks (with clinical, planimetric and photographic assessments).

Results: The mean duration of treated wounds was 6.7±5.2 months, with an average surface area of 2.7±2.4 cm^2 at baseline. The surface area decreased by 63% after 12 weeks. A complete healing was observed in 10 patients (30%) after a mean time of treatment of 62 days.

No local adverse event related to the local treatment, occurred during the follow-up and the acceptability was considered good by health care professionals and patients.

Conclusions: This pilot clinical study has documented the good efficacy and good tolerance of the NOSF in the local treatment of these diabetic foot ulcers and seems to offer a promising therapeutic alternative.

Diabetic Foot 1

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ASSOCIATION BETWEEN, TNF, AGER AND MHC2TA POLYMORPHISMS AND DIABETIC FOOT ULCER

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Aim: Diabetic foot ulceration is accompanied by inflammatory processes resulting in increased local levels of inflammatory mediators. The HSPA1A polymorphism was recently shown to be associated with the severity of diabetic foot ulcers and the outcome of surgical treatment. The aim of this study was to investigate associations between four other genes involved in inflammation and diabetic foot ulcers.

Methods: The LTA T60N C→ A, TNF -308 G →A, AGER -374 T→A and MHC2TA -168A→G polymorphisms were genotyped in 964 T1DM and 3261 T2DM Scandinavian patients. Totally 13.6% (N=131) of the T1DM and 8.7% (N=283) of the T2DM patients had a history of foot ulcer.

Results: Having the LTA CA or AA genotypes was more common in T1DM patients with than without diabetic foot ulcers (83.8% vs. 73.3%, p=0.009). In a logistic regression analysis having the CA or AA genotypes was associated with increased risk for diabetic foot ulcer (OR=1.78[1.04-3.05], p=0.036). No association was found between the studied polymorphism and diabetic foot ulcer in type 2 diabetic patients. The median ulcer healing time in T1DM patients was 107 [52-210] days compared to 146 [98-371] days in patients with or without the MHC2TA AA genotype, respectively (p=0.05).

Conclusions: The LTA T60N C-->A polymorphism is associated with the susceptibility for diabetic foot ulcer in type 1 diabetic patients. A larger study is needed to confirm the putative association between ulcer healing time and MHC2TA polymorphism.

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A PROSPECTIVE CONTROLLED STUDY: TOPICAL WOUND OXYGEN THERAPY* IN THE TREATMENT OF SEVERE DIABETIC FOOT ULCERS

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Introduction: Chronic wounds on the lower leg and foot are frequent, difficult to treat and show high rates of complications. The objective of this prospective study was to examine the clinical efficacy of a unique pressurized topical oxygen therapy device in an outpatient setting and patients with severe diabetic foot ulcers (DFU).

Methods: Patients visiting a community wound care clinic for treatment of severe DFUs were offered topical wound oxygen* or advanced moist wound treatment (AMWT) based on current best practice guidelines. The topical wound oxygen* patients were treated daily 60-minutes, 5 times a week. The device delivers humidified medical grade oxygen into a chamber in a cyclical manner with pressure cycles between 5 mbar and 50 mbar. The primary endpoint was complete ulcer closure after 90 days defined as skin epitheliazation without drainage or dressing requirements. Follow up was up to 24 month after start of the study.

Results: 28 patients were included into the study. The two different arms of the study were quite similar with respect to age, gender distribution, HbA1C, and ABI, but the topical wound oxygen* group recruited more severe wounds than in the AMWT group. All patients had plantar wounds, received off-loading therapy and had peripheral neuropathy as indicated by a loss of protective sensation. The topical wound oxygen* arm showed significantly more complete ulcer closures after 90 days than the AMWT group (14/17, 82.4% vs. 5/11, 45.5%; (p=0.04)). Median time to closure was 56 days [IQR 39–81 days] in the topical wound oxygen* group and 93 days [IQR: 62–127]) in the AMWT control group. There was no reoccurrence at the ulcer site after 24 months follow up in either group.

Conclusions: This study demonstrated significantly higher healing rates with no ulcer reoccurrence after two years in patients with DFU treated with topical wound oxygen* compared to AMWT.

*TWO2

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EWMA EDUCATION COMMITTEE – WHERE WE ARE TODAY

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The EWMA education committee has been in existence since 2000 and over the past 10 years has grown into an active and vibrant group. The main focus of our work is to increase the knowledge and skills of health care professionals' involved in the management of individuals with wounds of varying aetiologies, thereby enabling them to provide optimum wound care across Europe. Thus far, a number of successful aspects of the work of the committee have been:

- The development of curricula exploring a variety of wound aetiologies

- The establishment of an endorsement process for existing education programmes

- EWMA University Conference Model

From early 2008 the main focus of our work has related to a project with the working title "Teach the Teacher". The project is aimed at raising the awareness of and improving the comprehensiveness of undergraduate nursing education in wound management across Europe.

The project development for "Teach the Teacher" has been funded by an unrestricted education grant from 3M. We are delighted to report that this development work has resulted in the production of an application to the European Commission Lifelong Learning Programme. We now have an extensive, explicit working document which will act as the focus for further development of the programme.

EWMA Education

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THE NEW STRATEGIC FRAMEWORK FOR EUROPEAN COOPERATION IN EDUCATION AND TRAINING LEADS IN WOUND HEALING TRAINING TO: CONSENSUS, ACCREDITATION & LIFE-LONG-LEARNING

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Since the European communiqué of Maastricht (2004) and the Lisbon contracts (2007) comparable educations got much more importance in the European cooperation process. Resent activities of the European Qualification Framework for Life-Long-Learning even support these ambitions.

Europewide a broad spectrum of different types of education in wound healing is offered. To fulfill European requirements in this field, a European standardized education process has to be used, that gives information about the competence of the educated person, guarantees quality control and implements a life-long-learning component.

One process that fulfills all that requirements follows the “personal certification norm” (DIN EN ISO 17024) norm that officially is world wide accepted. The frequently used DIN EN ISO 9001standard is used for quality management and does not describe the competence of a person passing the education. The quality control in the ‘17024’ norm is guaranteed only by an accreditation process. Hereby the educating organization works together with a certification agency (CA) that controls the education and handles out the diploma. On the other hand, the National Accreditation Body grants for the high competence of the CA.

To prove the competences of the organization setting up a teaching plan a consensus process with other organization or scientific societies can be very helpful. Personnel Certification automatically means a limited validation for the certificate, what makes a revalidation necessary, providing a Life-Long-Learning process. The basic principles of this process are standardized in Europe giving the base for a Europe-wide accepted education.

EWMA Education

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CONTRIBUTION OF POSTGRADUATE STUDENTS TO VALUABLE SCIENTIFIC RESEARCH – THE PREVALENCE OF WOUNDS IN FLEMISH HOSPITALS EN HOMES FOR THE ELDERLY

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The educational aspect of setting up a continuous studie with postgraduate students the didactical aspect about The prevalence of wounds in Flemish Hospitals en Homes for the elderly.

The Aim: As almost no figures are available in Flanders (Belgium) concerning the prevalence and type of wounds the students of the postgraduate programme wound management ostomy therapy and tissue repair thought it was a major issue to find out how big the problem of ‘wounds’ was in the geographical area were they would go to work. Since 2009 we possess the results of a pilot prevalence study on chronic leg ulcers which estimated about 0.7% of all patients have leg ulcers in institutionalised care in Flanders done by postgraduate students.

The study aims to give an acceptable insight in the number and type of wounds patients have in Flemish hospitals en Homes for the elderly.

Methods: First there was looked at the number of hospitals en homes for the elderly in Flanders. Secondly a randomised number of hospitals and homes for the elderly was picked out. Al these institutions were visited by a postgraduate student. there al the wards were visited with a questionnaire to be filled in by the investigator.

The results were gathered and statistically transferred.

Results: The results show that we underestimated the number of wounds in Flanders and that we did not have a correct view on the balance between the types of wounds.

Conclusion: Wounds are a major problem in institutionalised care in Flanders. There are more wounds in Institutionalised care in Flanders then estimated.

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PARTICIPATION IN THE EWMA UCM – A STUDENT EXPERIENCE

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A student's perspective on the influence of EWMA on the Belgian postgraduate course in ostomy care, wound care and tissue repair.

In Belgium there is a two-year postgraduate course (60 ECTS) in ostomy care, wound care and tissue repair organized by the Flemish wound care association in cooperation with different colleges of higher education. The UCM approach of the EWMA conference is a part of this course and is obligatory for the students in the second year. Of course the students get some papers to make and learning objectives to reach during and trough the conference. Since the Lisbon conference, the Belgian students were also participating the EWMA UCM programme (Lisbon & Helsinki). This specific programme was especially created for postgraduate students attending the conference. To evaluate the influence of both the conference and the UCM on the outcome of the postgraduate course and even on daily practice, EWMA invited a student to talk about her experiences and impressions during the courses.

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A SURVEY OF UNDERGRADUATE NURSE EDUCATION IN EUROPE

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Background: As one component in the development of an education programme for teachers of wound management to undergraduate nurses, the development group identified a need to determine the current education provision across Europe. Little is recorded in the literature pertaining to undergraduate nurses; the main emphasis tends to be on registered nurses. Therefore, to address this gap, a survey of undergraduate nurse education in Europe was conducted.

Aim: To identify the current provision of undergraduate nurse education in wound management across Europe and to determine satisfaction with this education.

Methods: Data were collected from the EWMA cooperating associations (47 wound management associations located in 32European countries) using an online survey tool The questionnaire elicited information pertaining to the content, delivery, time allocated and assessment processes including the respondents satisfaction with the overall education provision.

Results: Responses were received from 41 respondents, yielding an 87% response rate. Nursing accounted for the majority of responses to the survey (50%). Overall the respondents did not find that sufficient emphasis is placed on wound management education in undergraduate nursing programmes. Indeed, 25% reported that the total time spent on education was between 2 and 4 hours, a further 35% reported up to one day is allocated to this aspect of the education programme. Pressure ulcers, leg ulcers and diabetic foot ulcers were the most commonly addressed wound types. Interestingly, lymphoedema was rarely alluded to. The majority of teaching takes place in face to face lectures, with other blended learning approaches rarely utilised. 85% reported that the competency of the nurse in the provision of wound management was not assessed.

Conclusion: This study provides an insight into the provision of undergraduate education in wound management across Europe and will form the basis for the development of some components of the EWMA Teach the Teachers programme.

Acknowledgements: This study is presented on behalf of the EWMA Teach the Teachers development group. The work was made possible through an unrestricted education grant from 3M Medical Division.

EWMA Projects

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SIX DANISH PRESSURE ULCER PREVALENCE STUDIES

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[3]*Annette V. Norden, M. Mols, A. Madsen & L. B. Thomsen, Herlev Hospital (2005, 2007) (Herlev, Denmark)*
[4]*Rikke Trangbæk, E. Vestergaard & E. G. Vestergaard, Regionshospital Viborg, Skive, Kjellerup (2004) (Denmark)*
[5]*Jette Palmberg (Kirsten Steen Pedersen & Marianne Andersen), Vordingborg Kommune & Storstrømmens Sygehus Næstved (2004, 2006) (Denmark)*
[6]*Hvidovre Hospital (2007, 2008) (Hvidovre, Denmark)*

Aim: The purpose of the six respective point prevalence studies has been to obtain a snapshot of the number of pressure ulcers in the hospitals and to measure effects of changed practice in order to improve prevention and treatment of pressure ulcers. A secondary aim was to record risk screening and use of pressure relief.

Method: In all studies, each patient was observed in all pressure sensitive sites and any dressings were removed. Five were repeated after 1-3 years in order to measure effect of changed practice. Data on pressure ulcers included in this article are divided into grades 1-4 pressure ulcers.

Results: In general, the prevalence for the more serious pressure ulcers (grade 2-4) constitutes 7-14%. For grade 1-4 a prevalence of around 15-25% was routinely observed. Several studies observed that the required risk screening was not performed at admission to the departments. In several of the hospitals it was found that a relatively large amount of erroneous relief occurs in the shape of unnecessary relief of patients and inadequate relief of low and high-risk groups. In general, lacking documentation of pressure ulcers in patient journals and nursing journals were reported in all the studies which have assessed the documentation in the departments.

Conclusion: No significant reduction on pressure ulcer prevalence was measured. The authors mention factors such as aging population and point prevalence related coincidence as possible explanations and propose actions such as educational initiatives and simplification of risk screening tools.

EWMA Projects

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PRIMARY WOUND CARE IN A DANISH COUNTY

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Background: Wound care in primary health care (home care) call for many nursing resources and the knowledge about wounds in home care is not well documented. It has been estimated that the economical burden of treatment of wounds in the European Communities is about 2% of total health care costs. To establish knowledge of the aetiology, nursing resources and plans for treatments this study was carried out in 2003 in the County of Copenhagen with 550.000 citizens. (The capital of Copenhagen is not included).

Design and Method: A descriptive survey study, where the home nurses used a questionnaire.

Results: On a certain day in 2003 all patients with wounds are enrolled in the study. The cohort is 1252 patients, representing 1740 wounds, who need home care for their wounds.

- Table 1: Classification of the wounds listed according to their aetiology.
- Table 2: Demographic data listed. Median age: 74.4 years, 65% of the cohort are women, etc.
- Table 3: Shows how long time the patients have suffered from wounds.
- Table 4: The nursing contact and the duration of contact weekly, including the nursing resources in caring for 1740 wounds.
- Table 5: Shows who diagnosed the wounds and who made the plans for treatment: doctors, nurses or other persons.
- Table 6: Conclusion: Characteristic of wounds, care plans, age of the patient, etc.

Future: The results will be used in a new study focused on selected groups of patients with wounds concerning quality assurance.

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PREVALENCE OF LEG ULCER IN CZECH REPUBLIC – PHASE II AND III

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Aim: After determination of the prevalence and aetiology of leg ulcer in a population of patients registered in town Pardubice and suburban areas we try to improve the use of modern methods.

Method: We work with the patients, nurses and doctors and we determinate in phase I our work and try to educate all in wet healing methods and then interview a structured questionnaire by health professionals

Results: Education was made in workshops and individual with nurses and doctors and we try to give more information to patients too.

Discussion: The results show to us new aims to concentrate our education work.

However, these results point to an important number of patients with chronic leg ulcers (more than 5 years).

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EWMA PROJECT – LEG ULCERS IN SLOVENIA: IMPLEMENTATION

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Aim: In the last, third phase of 3 years lasting EWMA project Leg ulcers in Slovenia we checked up acquired knowledge about leg ulcer therapy in practice and the influence on the prevalence of leg ulcers in Dolenjska region.

Methods: The same questionnaire was filled for patients who were included in EWMA project in Slovenia in May 2007. We found out how many patients still had an ulcer. We included new patients with leg ulcers in that region, filled the questionnaire, and did clinical examinations with ABPI and applied dressings and short-stretch compression systems donated by sponsors.

Results: The prevalence for leg ulcers for Dolenjska region in Slovenia was1,8/1000 in 2007 and in second phase we observed statistically significant improvement of knowledge about leg ulcers assessment and therapy for doctors and nurses after two days of educations. The results for the third phase of project are not completed yet. An estimation of prevalence for leg ulcers for Dolenjska region in Slovenia in 2009 was 0,7/1000.

Discussion: The prevalence of leg ulcers for Dolenjska region in Slovenia was reduced significant by education of medical staff about leg ulcer management and therapy.

EWMA Projects

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THE LEG ULCERS TREATMENT – POLISH STRATEGY MODEL

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EWMA with co-authors became to introduce the new model of the treatment the patients with leg ulcer. Opole City and the region of Strzelce Opolskie were chosen as a target of the assessment in the south Poland.

In the first phase of the project 309 patients with leg ulcers were identified, prevalence was estimated on 1,49/1000 inhabitants. There was necessary to describe and introduce the new model of leg ulcers patients' care. In the next part of assessment there were conducted the education courses for the recognition of the medical personnel dealing with the patients with chronic leg ulcers. We introduced new model based upon EWMA recommendations. Patient with recognized leg ulcer were sent to reference center for fast and proper diagnostic. Direct care for treatment was conducted by nurse with surgical cooperation. After 24 weeks we have completed second phase of our project and estimated our patients. We estimated number of amputations, regressions and deceases. In the Third Phase we focused on: identification of all patients attending the new service with a leg ulcer, initiation a strategy of the collection of the baseline data, assessment the costs of treatment during the implementation phase, comparison the pre-implementation results with those achieved during the implementation phase.

We have payed attention at different problems relating with new project implementation such as: physician's habituation to old methods of leg ulcer treatment, patient's undiscipline, high cost of elementary new dressing.

Key session: Wound care concepts in countries with low resources

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BURULI ULCER, SETTING UP A PROGRAM IN AN AFRICAN DISTRICT HOSPITAL

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Buruli ulcer is a neglected tropical infectious disease manifested by large skin ulcers affecting mainly children.

Since 2004, a WHO recommendation for the establishment of a therapeutic combination Rifampicin Streptomycin has greatly improved the prognosis of this disease. The wound care stay nonetheless fundamental to the care of patients.

Unfortunately the quality of the dressings is rarely optimal. The treatments most commonly used are based on povidone iodine, Dakin and in the best cases on the oily dressings. Modern dressings are ignored outside of a few privileged structures.

For ten years, around the world, the approach of skin wounds has been greatly modified through a better understanding of the physiological processes of wound healing. The principles that were traditionally based on disinfection by antiseptics and drainage of the wound are no longer present. There is a consensus in favour of "wound bed preparation" strategy.

Since 2002, Medecins Sans Frontieres (MSF) Switzerland supports the hospital Akonolinga in Cameroon in the management of patients with this disease.

In 2006, MSF, in cooperation with the "Wound and Cicatrisation Group" of Geneva University Hospital, has introduced protocols based on the principles of "wound bed preparation". Two of the pillars of this approach are the systematic description of wounds using an evaluation form and the gradual introduction of modern dressings.

Haute école de santé de Genève, that have a partnership for several years with EPCIY (Private Catholic school of nursing in Yaounde), was implicated in the process of training modules by adapting modern concepts of healing to different types of wounds and specifically to African conditions and care equipment available (February 2008).

Our work shows already that patient comfort and care work are enhanced by these protocols. The less frequent change of dressings facilitate outpatient care. Improvement of wound healing allows a reduction in processing time and less need for surgery.

Acute or chronic wounds are common in Africa. Besides the etiologies similar to those existing in Europe (or metabolic vascular ulcers, surgical wounds or traumatic ...), there are more specific wounds (phagedenic ulcers, Buruli ulcers, leishmaniasis ...). We can also appoint burns, especially in patients with epilepsy.

Beyond our experience, we hope by this presentation open debate on the need in Africa, of using modern wound care. To meet this challenge, medical professionals in South and North, NGOs, pharmaceutical companies and the Ministries of Health should collaborate in their best interests and skills.

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CHRONIC WOUNDS AND LYMPHOEDEMA: THE ROLE OF THE WAWLC IN THE AFTERMATH OF THE HAITIAN EARTHQUAKE

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Over the past two decades, the world has seen tremendous medical advances in modern wound care and lymphoedema management, principally, due to new scientific knowledge, techniques and materials. These advances have occurred mainly in the developed countries. Unfortunately these problems have received little attention in the majority of resource poor nations. The necessity of basic wound care education was dramatically highlighted by the recent earthquake tragedy in Haiti. Care of the acute and chronic wound related to 80% of the earthquake victims. In crises and in everyday care, most developing nations are ill prepared to meet these demands. The WAWLC is positioned to respond to this need. The WAWLC philosophy: “teach the teachers” can lay the groundwork for a new focus on the acute and chronic wound--now seen as a “Global Imperative”. This session will review the mission and current initiatives of the WAWLC. Lessons from learned from the Haitian experience will be reviewed.

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THE STEP-BY-STEP PROJECT; IMPROVING DIABETIC FOOT CARE IN THE DEVELOPING WORLD

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There are 285 million people with diabetes worldwide, the number of affected people is predicted to reach 438 million by 2030.Diabetic foot complications are one of the most devastating complications in developing countries with a huge socio-economical burden. For that reason the Step by Step program was developed to improve diabetes foot care in the developing world by providing education for people with diabetes and healthcare providers in the prevention and management of diabetic foot problems.

The courses are held over a two-year period. The model consists of practical training courses of pairs of doctors and paramedics. The objective of the basic course is to improve and offer new skills for the diagnosis of the foot at risk and the treatment of these feet at risk and the uncomplicated foot ulcers. They will be motivated to develop diabetic foot care teams in their regions and to teach other healthcare providers.

The objectives of the advanced course are to deal with the more complicated ulcers and the Char teams in their regions and to design referral patterns.

During the two-year period the participants collect data on all the people in their care with foot problemsThe Step-by-Step model has already been effective in improving diabetes foot care in Tanzania, India and recently in Pakistan, Egypt, and Republic of Congo (all funded by the WDF) and in the Caribbean Region. In the latter, IDF and Rotary clubs were engaged in a joint project.

Results of those projects will be presented and discussed.

Key session: Wound care concepts in countries with low resources

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WOUND TREATMENT IN LEPROSY

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There are three concerns, access to expertise, restoring poor general health and managing the wound itself.

in the United Kingdom access is easy but leprosy would be not be diagnosed by a family practitioner or an orthopaedic surgeon. It may be missed by a dermatologist except but their taking a biopsy often gives them a second chance. In India Indian Systems of Medicine may not lead to a diagnosis but can lead to a cure. Numerous charitable NGOs set up for leprosy are mostly good at both diagnosis and treatment. Government hospitals are ill equipped to be helpful and private practice dermatology probably retains the memory of the disease, though elimination propaganda means that many believe it is eradicated. In China tertiary hospitals have a high standard of care but may misdiagnose. Rehabilitation Villages in China are ignored by expertise. The Village doctor has had little training for decades.

A lower limb ulcer in someone affected leprosy may be a venous ulcer due to immobility. Trauma to the wound and the need to offload is commonplace.

Management. Remove the cause a nail in a prosthesis, a thorn bush. a fire or heated pot, pressure requiring off loading,a venous leg ulcer or squamous carcinoma.The five principles of wound healing of the World Alliance for Wound and Lymphoedema Care (WAWLC): treat systemic illness such as anaemia HIV/Aids, diabetes or leprosy, protect the wound from trauma remove necrotic tissue and treat infection, keep the wound moist, control oedema.

Key session: Wound care concepts in countries with low resources

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A FIRST EXPERIENCE TRANSMITTING KNOWLEDGE IN WOUND CARE IN CAMEROUN

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In 2008, the nursing department of the Geneva Nursing and Midwifery University of Health Sciences (Heds-GE), it's partner, the Private Catholic School of Nursing in Yaoundé (EPCIY) and the Center for the care of Buruli ulcers in Cameroon at Akonolinga hospital developed an educational course for nurses in wound care. Médecins sans Frontières (MSF)-Geneva who initiated this project, brought their support. Two sessions permitted to set up two pilot centers who obtained the benefit of using selected modern wound care products and coaching at the end of the first session. Emphasis was put on moist wound healing and prevention of infection.

In 2009, during a six week training period at the Buruli Ulcer Ward in Akonolinga, one of the two pilot centers, two undergraduate students of Heds-GE, were able to consolidate the benefit of the educational initiative, thanks to their implication in their field trip on a long period of time.

A collaborative effort with the nursing team permitted to support the changes initiated in 2008 like the use of showering wounds. They also worked on developping guidelines concerning: asepsis on the renewal of dressings, hospital hygiene in the prevention of infection and pain management as an integrated element in wound care management.

This close daily follow'up with field reality brought a real help to the nursing teams to improve the healing of Buruli ulcer wounds.

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INVESTIGATION AND INTERVENTION – WHEN IS TIME TO ACT IN VENOUS WOUNDS?

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Introduction: Venous Surgery plays an essential role in recalcitrant venous leg ulcers. Patients need a comprehensive care concept. Treatment guidelines for treatment of venous leg ulcers are published in national and international guidelines. To answer the question for the role of venous surgery a cross sectional study in northern germany was performed, indicating good quality of care according to international standards.

Patients and Methods: Patients with chronic leg ulcers from all care institutions were included in the study. All actual and in the past performed venous surgery and concomitant therapies were documented. Besides fotodocumentation and evaluation of the clinical status, all data were collected from the patient´s records. Socioeconomic status, in patient care and quality of life completed the evaluation.

Results: in 2006/07 from 528 included patients with chronic leg ulcer, 502 were fully analysed. 63% of all ulcers had a venous origin, 23% were mixed arterial/venous, 14% were miscellaneous. Median duration of illness was 8.9y, median duration of chronic wound 2.5y. Only a small part of the population received adequate diagnostics, although vascular status was evaluated in the majority. Only 24.6% of all patients received vein surgery, and 70.5% compression therapy.

Conclusion: Care of patients with chronic venous leg ulcers occurs predominantly according to international guidelines. However, surgical treatment of the underlying disease is rarely performed and needs improvement.

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TIME TO ACT IN VASCULAR WOUNDS – THE DIABETIC FOOT

Gerald Zöch[1].

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When treating patients with a diabetic foot, the main aim is to avoid major amputations as these are accompanied by high morbidity and mortality rates. In addition to treating the infection and ischemia, the removal of necrosis is part of an acute and basic therapy for patients suffering from a diabetic foot. In patients with infected grade 4 or 5 lesions (Wagner), an acute necrosectomy, i.e. the complete surgical removal of all necrotic tissue, is recommended. Major amputations should only be performed in case of a vital indication or a complete necrosis of the foot (5 B-D). In all other cases, especially in patients suffering from a charcot foot or dry necrosis (4+5 A), major amputations should not be performed without prior assessment of the vascular status.

A diabetic foot generally doesn't tolerate necrosis, so even grade 0-3 lesions (Wagner) have to be debrided. Only after a debridement can the wound surface and wound volume be exactly assessed. In a debridement, necroses or calluses are removed with a knife, scissors or a curette without anesthesia. If these removals are performed on a regular basis, this allows for drainage and stimulates wound healing, so the development or spread of an infection can be avoided.

Necroses can by dry and black: upon demarcation, these mummifications are removed at the borders. Yellow or white and dissolving necroses almost always indicate a local infection. In these cases, a surgical intervention (necrosectomy) is urgently necessary. In the foot parts carrying the weight load, scurfy hyperkerastes can be developed. The can be easily addressed with a tangential removal.

Key session: Time to act in vascular wounds

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WHEN IS ACTION REQUIRED IN VENOUS ULCERS?

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Venous ulcers are a common problem affecting 1% of the adult population. The majority can, and should, be treated in a primary care without specialist assessment. Initial assessment should include a clinical history, palpation of the pedal pulses (including ankle brachial index - ABI), and screening for diabetes. Compression therapy may be commenced in non-diabetics with normal arterial supply without further assessment.

Even if an ulcer appears venous, patients with known peripheral vascular disease (claudication, previous bypass or peripheral angioplasty) should have specialist assessment before compression is applied. Patient with diabetes should also be referred.

Pain in venous ulcers is often due to infection which may require topical antiseptics and/or oral antibiotics. Admission and intravenous antibiotics is required only for spreading cellulitis in ill patients. Severe pain after compression is applied may rarely reflect occult arterial disease and compression should be released immediately and the patient reassessed.

Failure to progress is not unusual in those with long standing ulcers but very long standing ulcers (years), those with a raised edge and those that simply fail to heal progress after 8 weeks may require biopsy in a specialist setting. Co-existent lymphoedema is not uncommon, may delay healing and specialist assessment should be considered.

After ulcer healing, superficial venous surgery may be appropriate in younger patients who are fit for surgery and these should be referred.

Key session: Time to act in vascular wounds

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TIME TO ACT IN VASCULAR WOUNDS

Kathryn Vowden[1].

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Vascular disease is one of the major causes of chronic wounds, particularly wounds of the lower limb where 90% of wounds have a predominant vascular cause, venous disease being the main aetiological factor in as many as 70% of chronic wounds. Ischaemia is also one of the greatest barriers to wound healing. If not recognised it will have a serious impact on the patient's quality of life, delay healing, and can lead to limb loss and an increase in both morbidity and mortality.

Formal evaluation of vascular status should be an integral component of the assessment process for all patients with lower limb wounds. The Bradford Audit of wound care demonstrated that this is not always the case. The main areas of concern were patients with heel pressure ulcers and acute wounds such as pre-tibial lacerations 1-4.

Of the methods of vascular assessment available hand-held Doppler measurement of peripheral arterial pressure and the calculation of the ankle brachial pressure index (ABPI) is the most widely used and can be combined with waveform analysis and pulsatility index calculation, but other methods are available such as toe pressures, tissue oxygen tension measurement and pulse oximetry.

Management decisions and urgency relating to lower limb ischaemia are based on the patient's symptoms, the perceived healing potential of any lower limb wound and the risk and benefits associated with any considered intervention. This is a decision that requires input from the multidisciplinary team including the vascular surgeon. Investigations that may be appropriate include arteriography, duplex ultrasonography, magnetic resonance imaging and CT imaging. These investigations are designed to define the lower limb arterial anatomy and identify options for treatment including angioplasty or bypass surgery. The aim of such arterial reconstruction is to relieve symptoms, facilitate healing and ultimately to prevent limb loss. Such interventions are not always possible or successful it is therefore important that wound management and vascular reconstructive activities are carefully co-ordinated by the multidisciplinary team.

Hard dry eschar should be maintained whilst ischaemia persists and surgical debridement be deferred unless sepsis and/or wet gangrene is present making drainage of the wound the priority. The diabetic foot is a particular case where intervention to manage sepsis, especially when plantar space infection is considered likely, may take precedence over investigation and management of ischaemia.

In some patients the presence of arterial disease alone does not warrant intervention yet the impact of ischaemia on treatment options for a wound may mean that intervention is necessary. Patients with "mixed" ulcers may heal with reduced compression or short stretch bandage systems however if healing is prolonged then the option of arterial reconstruction should be considered to allow the application of high compression. Equally the option of venous surgery or ablation therapy with endovenous therapy needs to be considered as it may be applicable in over 50% of patients with venous ulcers and has been shown to reduce ulcer recurrence rates 5, 6.

To produce the best outcome for patients with vascular disease and a wound requires an integrated approach to care. This requires early assessment and prompt referral to the multidisciplinary team so that appropriate treatment can be instigated and the best result obtained. Delay in the referral process can increase the risk of serious complications, limb loss and poor quality of life.

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CANCELLED

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CHRONIC AND RECURRENT VENOUS ULCER TREATMENT, THE ROLE OF SURGERY

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Aim: Chronic venous ulcer disease is a difficult entity to handle. This study evaluates the mid-term effect of eradication of superficial reflux with additional subcutaneous fasciotomy on venous ulcer healing.

Method: Fifty-eight patients underwent fasciotomy. Pre-and postoperative tissue pressures (intramuscular, i.m. and subcutaneous, s.c.) were measured. Underlying disease was post-thrombotic (PT) in 19 patients (33%, 24 limbs, 27 ulcers) and primary venous insufficiency (PVI) in 39 (67%, 45 limbs, 64 ulcers). Preoperative tissue pressures were 23.5±6.1 mmHg (i.m.) and 9.8±3.2 mmHg (s.c.).

Results: Ninety ulcers (99%) healed. Tissue pressures significantly decreased following surgery to 5.5±3.1 mmHg (i.m.) and 0.6±1.1 mmHg (s.c.). PT patients had significantly tissue pressures compared to PVI patients. Ten ulcers in 6 patients recurred 6 to 20 months postoperatively (11%), giving 86.4% actuarial freedom from venous ulcer recurrence at 3 years following surgery. Ulcer recurrence occurred more often in PT (7 PT vs. 2 SCVI, p=0.032). Four patients (1 PVI and 3 PT) had re-fasciotomy; all healed initially but 2 ulcers (PT) recurred at 11 and 12 months.

Conclusions: Eradication of superficial reflux with additional subcutaneous fasciotomy for chronic and recurrent venous ulcer improves ulcer healing or success of skin-grafting. Recurrence is more frequently seen in patients with PT syndrome. In patients with ulcer recurrence and high tissue pressures re-fasciotomy can be helpful to promote healing, particularly in patients with primary venous disease.

Leg Ulcer 2

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A NEW APPROACH TO TREAT VENOUS ULCERS BY COMPRESSION THERAPY

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Aim: Traditionally, venous leg ulcers were treated with firm non-elastic bandages. However, compression therapy with an elastic medical compression stocking (MCS) is more and more applied. But the donning and doffing process of the MCS is difficult due to high friction between the skin and the stocking. The study showed that a newly developed compression stocking kit treats leg ulcers more effectively than bandages solving the problem of donning. It consists of an understocking manufactured with a patented knitting technique, using specific yarns and a regular compression stocking.

Methods: A clinical study was conducted with 60 patients suffering from venous leg ulcers. Patients were treated with either short stretch multi-layer bandages or the compression kit. The proportion of ulcers healed within 4 months and the time to completion of healing were measured. Subjective appraisal of patients was assed with a questionnaire. Friction tests were also performed.

Results: Complete wound closure was achieved in 70% with bandages and in 96% with the ulcer kit. Ulcers with a diameter of up to 4 cm healed twice as fast with the kit. For larger ones the healing time was similar. Pain was absent with the compression kit. Friction test results showed that the smooth outer layer of the understocking allows easier donning and doffing of the second stocking on top.

Conclusions: The newly developed compression stocking kit shows clear advantages over bandaging: Higher healing rate, no pain and it can be applied by patient himself at home.

[1] Sigvaris® Ulcer X®

Leg Ulcer 2

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TOPICALLY APPLIED MORPHINE GEL FOR THE PAIN-TREATMENT OF CHRONIC LEG ULCERS: FIRST RESULTS OF A CLINICAL STUDY

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The chronic leg ulcer is a multifactorial, interdisciplinary relevant syndrome of different underlying diseases. Although the use of systemic analgetics plays the major role to the treatment of the chronic ulcer pain, there is currently a limited variety of effective agents for the local pain therapy available. To assess the analgesic effect of topical morphine we developed a new kind of morphine gel for the pain treatment, which is conserved with the antiseptic polihexanide.

The study includes 26 patients with chronic leg ulcers, 20 were female, 6 male patients. The pain intensity was assessed during the first 24 hour after application and objectified by using a VAS ranged 0 to 10. All patients had a pain intensity of at least 4 points before we applied the morphine gel, the average pain intensity was 7.6 points. After the application of the morhine gel a reduction of the pain intensity was observed, with an average pain of 4.6 points. After a singular application of the morphine gel we noted a pain reduction in 23 (88.5%) of the examined patients. The absolute pain reduction was estimated from 1 to 8 and had an average of 36 points. Adverse effects were not observed.

These first results with the new morphine gel afford at least over 24 hours to combine the advantages of a moist wound healing and a local pain treatment. Therefore this new development demonstrates certainly a promising therapeutic alternative for the treatment of pain in patients with leg ulcers.

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VENOUS LEG ULCER PATIENTS WITH LOW ABPI'S: HOW MUCH PRESSURE IS SAFE AND CAN BE TOLERATED?

Jan Schuren[1].

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Aim: To evaluate the sub-bandage pressure, safety and tolerability of compression systems used for patients with ABPI's between 0.5 and 0.8.

Methods: Eight experienced wound care nurses in the Netherlands and Canada were asked to measure sub-bandage resting pressure and static stiffness index (SSI) of every applied bandage to patients with ABPI's between 0.5 and 0.8. A pressure measurement device* was provided as well as written instructions of the measuring procedure. Pressure was measured at the so-called B1 position. After removal, adverse events were documented as well as the duration of the bandage treatment.

Results: In total 114 bandages were evaluated. A variety of materials was applied. Most used were short stretch systems and in most applications padding materials were used. The average ABPI of the patients was 0.67 (range 0.5-0.79). Average wear time was 3.23 days (range 2-7). The average resting pressure was 29,53 (range 3-44), average SSI 6.42 (range 0-23). There was a clear relation between resting pressures and SSI's ($p<0.01$). Two adverse events were reported, both on pain in the foot. For one patient additional padding was used in subsequent applications. One patient was referred to a vascular surgeon.

Conclusion: The evaluation revealed that the majority of the patients in this study tolerated the applied pressure and the applied materials were safe to use.

* PicoPress, Microlab Elettronica, Italy.

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CLINICAL INVESTIGATION ON THE INFLUENCE OF OPTIC MARKS ON COMPRESSION BANDAGES SYSTEMS ON THE OBJECTIFIED PRESSURE

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The most common aetiology for a chronic leg ulcer is the chronic venous insufficiency. Beside modern moist wound therapy a consequent compression therapy should be a central aspect of the conservative treatment. Therefore in patients with venous leg ulcers compression bandages are used. Currently different compression systems are available. Apart to conventional bandages which need a special expertise for correct use multi-layer bandages with optic marks for pressure-control have been developed. The aim of our clinical investigation was to objectify pressure and the needed time of different bandage-systems applied by different proband groups. The proband groups consist of each 5 nurses, physicians and laities. Each proband had to apply all 3 bandages-systems 3 times

The results of our study demonstrate a broad individual variability concerning the applied pressure which differs between 15 and 106mmHg in the group with conventional compression bandages and 20 and 81mmHg in the group with two multilayer bandages-systems with optic marks. The average time which was needed to apply the conventional compression bandages was 1 minute and 43 seconds and 2 minutes and 18 seconds for the multilayer-systems.

We conclude that it becomes obvious that the multilayer compression-systems with optic marks need a little more time for application but can be reliable applied by most of the probands independently of their medical knowledge.

Leg Ulcer 2

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PAIN ASSOCIATED WITH VENOUS ULCERS AND ITS RELATION TO DYNAMICS OF WOUND HEALING

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Aim: The aim of the study was to assess pain dynamics among patients with venous ulcers treated by multilayer compression. Influence of pain associated with wound on healing dynamics was evaluated.

Material and Methods: Study was conducted between 2000 and 2006 in Venous Ulcers Outpatient Clinic. 112 patients were randomized into two groups treated by two- and four-layer compression. Level of pain intensity was described by analog scale and CEAP severity system.

Results: At the beginning of treatment the mean score of pain intensity was 6.47 points. Weak (rs=0,2) but statistically significant ($p<0.05$) correlation between pain intensity and patient age was observed and moderate correlation between pain intensity and initial wound area (rs=0,32, $p<0.01$) was also noted. The slight decrease in pain dynamics was observed among the patients treated with two-layer system but differences were not statistically significant.

Conclusions: The presence of pain did not influence the dynamic of healing. The healing dynamics depended on the initial ulcer area, it means along with ulcer area reduction the decrease in pain sensibility was observed.

Leg Ulcer 2

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PREVALENCE OF MRSA IN CHRONIC VENOUS ULCERATION

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Germs colonisation is a complication in 96% of chronic venous ulceration (CVU), in 30% cases associated with infection (cellulitis). The aim was to determine prevalence of the Methicillin Resistance Stapylococcus aureus (MRSA) at the CVU. This is the first study of MRSA in CVU in Serbia.

Method: A prospective analysis occurred during 2009, at 121 patients, mid aged 46.5 yrs (30-87). Diagnosis was made based on clinic, CDS, laboratory analysis (Kirby Bauer test).

Results: Staphyl Aureus (n=41), Pseud.aeruginosa (n=22), Staphyl.pyogen. (n=6), MRSA (n=20), Proteus spp (n=12), Esch.colli (n=15), Klebsiella spp. (n=5), Enteroccocus (n=3), Acinetobacter (n=3), Citrobacter (n=5), Cand albicans (n=4), and sterile (n=6). There were 126 isolates with 11 species. Gram positive and negative was 39 (73%) vs. 21 (27%). MRSA in total bacterial species participated with 15% and in total Staphyl. spp with 30%.

In dermatologic praxis MRSA is presented by 3.5%, in general medicine praxis, Staphy. aureus is presented with 1.7% and MRSA was 9% of all germs. MRSA and Pseudomonas aeruginosa formed biofilm associated with a resistance of antibiotics and increased a total time wound healing. MRSA decreased appearance of granulation, proliferation of fibroblasts and ketatonocytes.

MRSA was often in CVU with mixed germes and had specific relation with Pseudomonas aeruginosa, which caused anaerobic condition in wound. MRSA was associated with decreased immuno host defence. The treatment with antiseptics and antibiotic realize a elimination MRSA in wound.

Key words: CVU, MRSA

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KNOWLEDGE AND ATTITUDES OF NURSES ABOUT PRESSURE ULCER PREVENTION IN BELGIAN HOSPITALS

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Aim: Knowledge and attitudes of nurses might be related with applying pressure ulcer preventive care. This study aimed to get insight into the knowledge/attitudes of nurses regarding pressure ulcers and to explore the relation between knowledge/attitude and applying prevention.

Methods: A random sample of 14 Belgian hospitals, representing 207 wards, was selected. Out of that group, 94 wards were selected at random (2105 patients). Data regarding risk, prevalence and prevention were collected between April and May 2008. 553 nurses on the participating wards completed an extensively validated knowledge and attitude assessment instrument.

Results: Pressure ulcer prevalence was 13.5% and 30% of the patients were at risk; 13.9% of those patients received fully adequate prevention. The mean knowledge score was 48.7%. Lowest scores were obtained in the themes 'observation/classification' (score=45.8%) and 'prevention' (score=38.0%). The mean attitude score was 44.8%. Lowest score was seen for 'priority of pressure ulcers in care' (score=29.1%). A weak correlation was found between knowledge and attitude (r=0.24,p=0.001). A statistically significant relation was found between applying adequate prevention and attitude [OR= 1.19, 95% CI (1.006–1.032)]. There was no relation between knowledge and applying adequate prevention.

Conclusion/Discussion: Knowledge and attitude of nurses were inadequate. A relation between attitudes and applying prevention. Education should focus on classification and observation and on preventive measures. Interventions to improve attitudes concerning the priority of pressure ulcer problem should be developed.

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SOFT TISSUE-MANAGEMENT FOR A LIFESPAN IN A WHEELCHAIR FOR PARAPLEGIC PATIENTS

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Background: Health centres specialized in paraplegic patients are increasingly confronted with aging polymorphic paraplegics, who are suffering from recurring decubitus ulcers. This requires a simple strategy to surgically cover the decubitus ulcers. For this, the physician needs to save up soft tissue when treating the first decubitus in order to cover recurring ulcers with the same (remobilized) flap.

Method: A five-year evaluation done in retrospection gathered the data of 84 consecutive surgical decubitus treatments provided by one surgeon.

Results: Within the evaluation period 48 already rehabilitated patients (29 male, 19 female) were re-hospitalized due to decubitus within the area of the pelvic girdle, which had to be surgically treated. 13 of these patients needed more than one (and up to 7) surgeries within this period.

27 surgeries were performed to treat a primary decubitus (the most frequent were 14 posterior thigh flaps PTF). On the other hand, 57 surgeries (68%) were performed to treat a recurring decubitus after former flap plasty (26 PTF, 6 coccygectomies with local flap plasty, 6 fasciocutaneous gluteal flap, 5 TFL).

28 of the 55 surgeries performed on paraplegics were related to the ischium: 9 of them involved the coccyx, another 9 the sacrum and 8 the trochanter. 17 surgeries performed on tetraplegic patients involved the ischium (10). In the case of 12 other neurologies (mainly multiple sclerosis) the ischium was predominantly affected, too (5).

Conclusion: For the lifelong treatment of decubitus of a paraplegic patient, the set up of a generously planed fasciocutaneous flap plastic which can, if required, be repeatedly remobilized and used anew, is crucial. Muscle flaps, island flaps and small local flaps on the other hand support recurring decubitus. Taking into account that ulcers mostly form around the ischium (51%), it does not astonish that today PFT is the most common method used for decubitus surgery performed on paraplegic patients.

Pressure Ulcer

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PRESSURE ULCERS: INCIDENCE, CLASSIFICATION AND SCREENING. A PROSPECTIVE COHORT STUDY IN FIVE DIFFERENT UNITS IN DENMARK

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Aim: To conduct a valid risk assessment scale (Adhoc).To evaluate the prediction validity of Adhoc versus the Braden assessment scale.

Methods: Prospective cohort study in 3 hospitals situated in the county of Aarhus, Denmark: 2 intensive care, 2 orthopaedic units, 1 intern medicine, 1 oncologic and 1 unit of infectious diseases participated.

240 consecutive patients, between 17-99 years of age, hospitalised more than 24 hours were included. Data was collected from March 5 to June 12, 2003**Results:** 8 (3.3%) of the 240 patients had pressure ulcers at admission. 83 (36%) of 232 patients developed one or more pressure ulcer during their time of stay, fourteen percent of them developed pressure ulcers category 3 or 4.

The predictive validity was evaluated by using Bradens recommended cut off point 18 and Adhoc cut off point 4. Adhoc could correctly predict the presence or absence of pressure ulcers in 86% of the patients and Braden in 60% respectively. The inter-observer variation, in screening the patients for risk, between the author (expert) and the testers expressed by the Kappa value was found to be: Adhoc 0.79 and Braden 0.71.

Conclusion: If the high predictive validity in Adhoc could be repeated in a new and independent population, Adhoc could be considered a valid instrument for predicting patients at risk of developing a pressure ulcer. The result from this and other studies leads to the conclusion that routine use of the Braden scale in predicting risk cannot be recommended.

Pressure Ulcer

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PRESSURE ULCER PREVENTION: RANDOMIZED CONTROLLED TRAIL COMPARING THE EFFECT OF A STANDARD ALTERNATING PRESSURE AIR MATTRESS AND A ALTERNATING LOW PRESSURE AIR MATTRESS WITH GRADUAL INFLATION AND DEFLATION

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Background: Alternating pressure air mattresses (APAMs) provide pressure relief by alternating inflation and deflation of air-filled cells. Rapid change in pressure in air cells during deflation and inflation of an APAM is thought to induce reperfusion damage of the tissue. Theoretically, a slower, gradual deflation and inflation cycle should prevent ischemic reperfusion disorders of the tissue. No studies are available about the effectiveness of alternating low pressure air mattress with such a multistage inflation and deflation cycle (ALPAM's).

Aim: To compare the effectiveness of APAMs and ALPAMs on the incidence of pressure ulcers.

Design: Randomized Controlled Trial

Setting And Participants: Convenience sample of 5 Belgian hospitals (25 geriatric or medical wards) was used; 610 patients at risk (Braden<17) were included.

Methods: Patients were randomly assigned to experimental (n=298) or control group (n=312). In the experimental group patients were lying on an ALPAM. In the control group patients were lying on a APAM. Patients were observed for 14 days or until discharge. The EPUAP classification was used to evaluate pressure ulcer severity.

Results: Cumulative pressure ulcer incidence (category 2-4) on APAM was 5,8% vs. 5,7% on ALPAM. No significant difference was found (p=0.98). Kaplan-Meier survival analysis was used to analyze time to develop a pressure ulcer category 2-4. No significant difference was found (p=0.19) between patients lying on APAM and patients lying on ALPAM.

Conclusions: No difference was found between APAMs and ALPAMs in the development of pressure ulcers.

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AN ARGININE- AND MICRONUTRIENT-ENRICHED NUTRITIONAL SUPPLEMENT ACCELERATES PRESSURE ULCER HEALING AND REDUCES WOUND CARE IN NON-MALNOURISHED PATIENTS

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Aim: The potential of a specific oral nutritional supplement (ONS) to improve healing of pressure ulcers and reduce the intensity of wound care was assessed in non-malnourished patients with severe pressure ulcers in a multi-country, double-blind, randomized, and controlled trial.

Methods: Non-malnourished patients (based on BMI and Malnutrition Universal Screening Tool (MUST)) with stage III or IV pressure ulcers were recruited from 8 health care institutes in 4 countries (Czech Republic, Belgium, The Netherlands, Curacao). Patients were randomized to receive 3x200 ml/day of a specific ONS* enriched with protein, arginine, and micronutrients, or a non-caloric control product for a maximum of 8 weeks.

Results: 43 Subjects were included (22 ONS/21 control). Supplementation with the specific ONS resulted in a significantly faster reduction of ulcer surface area, as well as a significant reduction in severity score (Pressure Ulcer Scale for Healing) compared to the control product. Moreover, significantly fewer dressings were required per week than in the with the control product during the study period and significantly less time was spent on changing the dressings.

Conclusions/discussion: These results suggest that the effect of the specific ONS can reach beyond restoring caloric and protein deficiencies and that it has the potential to reduce health care costs. Supplementation with specific ONS seems warranted for non-malnourished patients, who would usually not be considered for nutritional support.

* Cubitan®, Nutricia, The Netherlands.

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ETHICAL DECISION MAKING DILLEMAS IN PREVENTION OF PRESSURE ULCERS IN TERMINALLY ILL PATIENTS

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Introduction: It is widely accepted that prevention of pressure ulcers (PU) is one of main goals in health care. Incidence of PU has been controlled. The rationale behind is well understood as healing of PU is time consuming, costly and a burden for patients. Terminally ill patients may have pains that worsen with repositioning. Strictly following the treatment protocol doesn't allow them to rest although this may be wished. Our medical nurses (MN) have been faced with the dillema how to treat such patients.

Methods: A questionnaire (6 questions) has been developed to find out what is best policy for prevention of PU in the eyes of MN. 36 MN participated in the survey. The questionnaires were collected. Descriptive statistics has been used for analysis.

Results: In 36 correctly filled questionnaires 94.4% MN have met the dillema in implementing the protocol for PU prevention. Still 75% believe that patients should be repositioned every two hours. An active support surface would be used by 83.3%. 91% of MN think that skin should be assessed regularly and 50% would use modern bandages. Non painful treatment of PU is a priority for 72.2% of MN.

Conclusions: MN have faced the dillema how to treat PU in terminally ill patients. Palliative care aims to provide patients as much comfort as possible. So protocols for PU prevention should be adjusted. MN will be helped to better understand this philosophy and care for these patients without feelings of guilt and negligence.

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ASSESSMENT AND TREATMENT OF UNDERNUTRITION IN PRESSURE ULCER (PU) PATIENTS: RESULTS FROM THE AIUC (THE ITALIAN WOUND ASSOCIATION) SURVEY

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Aim: Aim of the “Aiuc Nutrition Study Group” Questionnaire was to investigate nutritional practice among Italian health professionals dealing with PU patients.

Methods: A self-administered questionnaire about nutritional attitudes and routines was distributed to all participants attending the VIII AIUC National Congress. Three hundred eighty-eight participants completed the questionnaire; of them 68% were nurses, 30% doctors, 2% different health professionals.

Results: Prevalence of malnutrition in PU patients was estimated 5-10% and > 20% of their patients by 33% and 34% of participants, respectively. Most of professionals (93%) declared that at least one nutritional parameter was considered at their first evaluation. The considered nutritional index respectively for doctors and nurses was: actual weight 3% vs 10% ($p<0.005$); weight change during the last 6 months, 7% vs 13% ($p<0.005$); a screening tool for PU risk 6% vs 24% ($p<0.005$); a screening tool for malnutrition risk 2% vs 4% (NS). Of the total of professionals who completed the questionnaire a great percentage declared that oral supplements, tube feeding, parenteral nutrition (45%, 64% and 64%, respectively) were prescribed in less than 5% of their patients. The reasons of such a low treatment rate were the absence of an adequate management of home artificial nutrition and its reimbursement by Healthcare System.

Conclusions: Knowledge of the importance of nutrition in prevention and treatment of PU is wide in Italian professionals. However, nutritional instruments for an early diagnosis are different for different professionals, the number of treated patients is low and more attention to managing issues is desirable.

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QUALITY OF CUTANEOUS COVER FOLLOWING PLASTIC SURGERY

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Aim: The surgical solution of pressure sores employing surgery methods can be a benefit to treatment of pressure sores of III or IV stages. Speeding up of the treatment reduces the cost of acute care and improves the quality of the patientś life.We try to define indications for possible procedures of operations.

Metod: this study is based on the analysis of retrospective date file of 960 hospitalizations of patiens with pressure sores during10 years.

Results: The occurence of relapse is statistically more significant in males with a langer time of first hospitalisation and transversal spinal lesion. At the same time, the relaps occurence did not depend on age, type of operating solution / flap used/ or finishing treatment of patients in the ward, either on wheater ischial pressure sores was involved.

Discussion: The results presented can be used as a basis for continued monitoring of this area.We also wish to participate in formulating and introducing recomended procerures in our country.

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A COMPARISON BETWEEN A NEW AUTOMATIC SYSTEM AND DOPPLER METHOD FOR OBTAINING

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Aim: The purpose of this study is to establish whether ABPI with the new device is in good agreement and can be performed quicker than with Doppler, and negates the need to rest the patient.

Method: A randomized cross-over study design of 400 limbs was chosen so that unbiased comparisons between unrested patients with the new device and Doppler, and patients rested with the new device and Doppler could be made. The time taken for each test was noted.

The analysis methods used were Bland Altman agreement plots, equality plots and Pearson correlation.

Results: Results show good correlation between unrested patients with the new device and Doppler ($r=0.85$, $p<0.05$) and patients rested with the new device and Doppler ($r=0.86$, $p<0.05$). 95% limits of agreement were +0.23 with a bias of -0.07 for unrested patients with the new device and Doppler and +0.24 with a bias of -0.04 for rested patients with the new device and Doppler. Mean time taken to perform the tests was 7.1 minutes for the new device and 26.5 minutes for Doppler.

Conclusion: These early results show that the new device has comparable results with Doppler and a considerable reduction in time to perform the tests. The simplicity, speed and accuracy of the new device give it the potential to be used in the community measurement of ABPI prior to compression bandaging and treatment planning for non healing foot wounds.

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IMPLICATION OF STOCHASTIC RESONANCE IN A NOVEL ELECTRICAL FREQUENCY PATTERN ASSOCIATED WITH CHRONIC WOUNDS AND CHANGES OF PATTERN UPON HEALING

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Aim: Medical research on endogenous alternating current (AC) has primarily focused on action or injury of nerves, but there has been a paucity of research on endogenous AC in wounds. Our goal was to explore the role of somatosensory nerve intervention in wound healing with focus on the phenomenon of stochastic resonance. Our specific aim was to indentify endogenous stochastic signals around wounds and to evaluate if they are specific.

Methods: We measured stochastic signals on more than 600 human subjects by using an approved data acquisition system*. We recorded electrical signals in patients with tissue damages and healthy volunteers. The effect of stochastic resonance was further studied by treatment of chronic wounds with stochastic electrical noise stimulation (an approved device)**.

Results: Chronic wounds patients (n=83) exhibited specific stochastic signals versus healthy subjects (n=48) $p < 0{,}001$. Patients with neurological comorbidities (n=29) show lower signals ($p < 0{,}001$) around wounds. Specific stochastic signals detected at discrete wound bed conditions (n=164) $p < 0{,}001$. During debridement of chronic wounds (n=15), significant higher stochastic signals triggered around wound and simultaneously on contralateral asymptomatic limb. Stimulation with stochastic noise (50) affected endogenous signaling. Measurements around tissue damages (n=320) show the nervous system effects on stochastic electrical signaling.

Conclusions: We report on novel stochastic signaling in wound healing. We have confirmed our findings by showing that stimulation by stochastic noise accelerated healing presumably by stochastic resonance.

* PowerLab/4s system (ADInstruments, Milford, MA)
** LifeWave Ltd. Israel

Devices and Intervention

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HYDROSURGERY DEBRIDEMENT IN ISCHEMIC WOUND TREATMENT

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Aim: Debridement of ischemic wound is a controversial treating activity. In addition to timing of successful revascularization, choosing the correct way of debridement and local therapy are essential for healing. The goal of our study is to find indications and optimal order in ischemic wound debridement. We compare outcomes of hydrosurgical, surgical and autolytic debridement.

Methods: We have studied group of patients with peripheral arterial occlusive disease following revascularization (surgical or endovascular) of 3 years ago. We debrided 37 wounds by a hydrosurgery system*, 35 wounds by sharp surgical debridement (scalpel and scissors) and 35 by autolytic debridement (moist therapy dressings). Moist therapy was the standard treatment of the wound. We have concentrated on the wound bed quality (time and number of procedures for dead tissue elimination), length of hospitalization, time for complete healing and leg salvage.

Results: The number of procedures for elimination of necrosis was 1.3 in hydrosurgery group, 21 in autolytic debridement group and 7.6 in sharp debridement group on average. Time for complete healing was 92 days for hydrosurgery group (80 days when NPWT came after), 170 days for autolytic debridement and 120 days for sharp debridement group. The length of the stay in the hospital was 18 days in hydrosurgery group and 21 days in sharp debridement group. The majority of autolytic debridement patients was treated out of the hospital.

Conclusions: Our study confirmed high efficiency of the hydrosurgery* debridement following revascularisation on condition of effective vascular reconstruction.

* Versajet

Devices and Intervention

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THE EFFECT OF SHOCKWAVES ON DIFFERENTIATION AND FUNCTION OF MYOFIBROBLAST

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Aim: Mechanical forces play an important role in the control of cell behavior. Based on this concept, shockwaves (SW) have been recently introduced for the treatment of non-healing wounds. However, the mechanisms by which SW interfere with the healing process remains unclear. In this study, we investigated *in vitro* and *in vivo* the effects of SW on myofibroblasts, the major cell type promoting extracellular matrix remodeling and wound closure.

Methods: *In vitro*, human dermal fibroblasts were subjected to increasing doses (250, 500 and 1000 impulses) of SW at 0.15mJ/mm^2 on day 1, 4 and 7 of culture. The presence of the myofibroblast marker alpha smooth muscle actin was quantified by immunofluorescence and Western blotting. The contractile function of myofibroblasts was evaluated by measuring collagen gel contraction. *In vivo*, we treated full thickness dorsal excisional wounds of healing-impaired db/db mice with 500 SW impulses 3-times per week. Untreated wounds served as control. Wound healing was evaluated microscopically and macroscopically over a period of 28 days. (n=9 per group)

Results: SW increased proliferation of dermal fibroblasts and enhanced myofibroblast differentiation and contractile function in a dose-dependent manner. Similar results were observed in vivo, resulting in a faster wound closure when using an optimal dose of 500 SW impulses.

Conclusion: This study demonstrates that controlled application of mechanical forces induced by SW stimulates myofibroblast proliferation and differentiation, thereby improving the closure of poorly healing wounds.

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WATER-FILTERED INFRARED-A (WIRA) IMPROVES WOUND HEALING

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Background: Water-filtered infrared-A (wIRA) is a special form of heat radiation with high tissue penetration and a low thermal load to the skin surface. wIRA corresponds to the major part of the sun's heat radiation, which reaches the surface of the earth in moderate climatic zones after being filtered by water vapor in the atmosphere (figure 1).

Aim / Method: Review of seven prospective clinical studies (four of acute and three of chronic wounds), including six randomized controlled trials [1].

Results: Besides non-thermal cellular effects, wIRA produces a therapeutically usable field of heat in the tissue and increases temperature (+2.7°C at a tissue depth of 2 cm), oxygen partial pressure (+10 mm Hg, +32%, at a tissue depth of 2 cm, figure 2) and tissue perfusion. These three factors are energetically vital for wound healing.

wIRA can considerably alleviate pain (without exception during 230 irradiations, $p<0.000001$, figure 3) with substantially less need for analgesics (52-69% less) and diminish wound exudation and inflammation. The results of the evaluation of wound healing ($p<0.000001$) and the cosmetic result are markedly better. wIRA can advance wound healing or improve an impaired wound healing both in acute and in chronic wounds: median reduction of wound size of 90% in severely burned children already after 9 days compared to 13 days ($p=0.00001$, figure 4); 18 versus 42 days until complete wound closure in chronic venous stasis ulcers; reaching complete wound closure and normalization of the thermographic image in otherwise recalcitrant chronic venous stasis ulcers (figure 5). After major abdominal surgery there was a trend to a lower rate of wound infections (7% versus 15%) and a trend towards a shorter postoperative hospital stay (9 versus 11 days).

Even the normal unimpaired wound healing process can be improved by wIRA.

Most of the mentioned effects have been proven with an evidence level of Ia/Ib.

Conclusions: wIRA can generally be recommended for use in the treatment of acute and chronic wounds.

Literature

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Figures not available in abstract book.

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POLYMERIC MEMBRANE DRESSINGS IN COMBINATION WITH TOPICAL NEGATIVE PRESSURE – THE VIENNESE METHOD

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Introduction: At our traumatology/vascular surgery we often use TNP to facilate healing. The recommend change frequency is every 2-3 days but due to high workload we cannot change that often. This often causes problems with granulation tissue growing into the foam, leading to traumatized bleeding tissue and painful removal.

Aim: A pilot evaluation of polymeric membrane dressings as a primary wound contact layer combined with the regular foam used in TNP to evaluate;
- ingrowth of tissue
- pain
- healing

when used longer than the recommended time.

Method: We chose polymeric membrane dressings as they are frequently used at our clinic instead of/and after TNP. Change frequency every 2-5 days depending on macroscopic colour change in the dressing or amount of fluid in the vacuum-pump collector.

5 patients with different types of wounds were chosen.

Results: The combination of polymeric membrane dressings and TNP made handling very easy. Patients reported no/reduced pain. No observations of ingrown tissue in the polymeric membrane dressings.

In three patients we only needed 3 dressingchanges to achieve woundclosure with skin grafts and/or local flaps.

Discussion: Our subjective feeling is that we achieved faster healing, less infection/pain and increased patient comfort with this combination. Extended weartime did not have a negative impact on the woundhealing or cause sticking. However, these are preliminary findings, the sample-size is small and we plan to perform studies with more patients in order to achieve more robust data.

Devices and Intervention

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TRANSCUTANEOUS OXIMETRY AS INDICATOR FOR SUCCESS TREATMENT WITH TNP

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Aim: It is a common experience within patient care that a small number of patients are «non-responders» to treatment with topical negative pressure (TNP). We wanted to find a tool that could identify patients before actual treatment with TNP, and to find those that would not benefit from this therapy. This would avoid treatment failures and create healthcare cost savings.

Method: A group of 50 paraplegic patients suffering from pressure ulcers underwent the transcutaneous oximetry measurements. We considered normal values as in use for perfusion of lower limbs (>50%, 50%<x<30%, <30%). We have highlighted 5 different patient groups:

1) Oximetry >50% increasing after treatment
2) Oximetry 50%<x<30%, increasing during and after treatment
3) Oximetry <30% increasing during and after treatment
4) Oximetry <30% increasing during treatment
5) Oximetry <30% not changing or decreasing during and after treatment (= non-responders)

Results: 7 patients (13%) belong to group 5, which is considered the group of non-responders. To support these findings we also performed a retrospective analysis of our paraplegic patients with TPN-treated* ulcers.

Forty-two (14%) of the 300 treated patients were non-responders.

Both groups of non-responders showed similar characteristics:
- Paraplegic from ischemic injury
- Diabetes Mellitus
- Heavy smokers
- Arterial vascular disease
- Age >70 years

Conclusion: This study and the retrospective analysis showed that perilesional transcutaneous oximetry can help identifying patients who will not respond to treatment with TPN.

* TPN used is V.A.C.® Therapy (KCI Medical Srl., Italy)

Devices and Intervention

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BENEFITS OF ANALYSIS OF BLOOD MORPHOLOGY IN THE EVALUATION OF CHILDREN WITH DISTROPHYC EPIDERMOLYSIS BULLOSA (EB)

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Background: Epidermolysis bullosa (EB) is a congenital disease characterized by fragility of the skin and mucosa. Blisters and erosions formation are response to a minimal trauma. The concern in the assessment of these patients is to establish the diagnosis, implement appropriate skin care and treatment of extracutaneous complications in order to ensure the best quality of life for these patients. The relationship between the patient's clinical symptoms and the shifts in peripheral blood as part of a total patient evaluation has been described for researchers in the worldwide as an accurate and cost-effective means of monitoring therapeutic.

Aim: To report benefits of using High Resolution Blood Morphology in assessing the disease condition and treatment follow-up of the patient with EB.

Methods: Sixteen patients (12 m 4 f) were underwent evaluation of a drop of peripheral blood. After collecting of the blood sample, a live and coagulation screening test as well as free-radical oxidative footprints screening test was analyzed through the method of Bradford Research Institute.

Results: High Resolution Blood Morphology allowed us to evaluate and identify blood morphologies correlating with disease states like anemia, metabolic imbalances, malnutrition, oxidative stress, systemic toxicity and hormonal dysfunction. In spite of ours results, we clarify that his assessment is not a diagnostic test but functional assessment.

Conclusion: The analysis enables us, from a drop of peripheral blood, to detect a morphologic alteration which has opened a way for the treatment follow-up of patients with EB thereby facilitating the patient's welfare.

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THE OVERUSE OF ANTIBIOTICS IN PATIENTS WITH CHRONIC WOUNDS

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Aim: Existing guidelines recommend limiting the use of antibiotics in the treatment of chronic wounds. However, the systemic and local use of antibiotics is still one of the most common actions taken when wounds are treated in a primary health-care setting. The purpose of this study is to determine the overuse of antibiotics in chronic wound care.

Methods: Data of 105 patients referred from general practitioners (GP) to our wound healing unit in 2008 were analyzed. Data were collected from the letters of referral. Where such data was lacking, a questionnaire was sent to the GP in order to obtain the information needed.

Results: At referral, the ulcers had an average age of 7.1 months. The most common wound diagnoses were venous ulcers, traumatic ulcers, and pressure ulcers. Swabs had been taken by the GP in 31.4% of all patients. 84.5% of patients where swabs had been taken had received antibiotic treatment. Overall, 57.1% of all patients got antibiotics before referral to the specialist wound clinic. 13.3% received more than one treatment course with antibiotics. The most common used antibiotic was dicloxacilline (41.2%).

Conclusions: Wounds usually become chronic because of biofilm formation. Biofilms are not vulnerable for most antibiotics. Furthermore, the uncritical use of antibiotics is a common reason for the development of antibiotic resistance. This study proves the overuse of antibiotics when wounds are treated in primary care. Strategies to get the message to the GPs have to be developed.

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ANALYSIS OF STAPHYLOCOCCUS AUREUS'S ADAPTATION CAPACITY TO ANTISEPTICS BY MICROPLATE-LASER-NEPHELOMETRY

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Aim: *Staphylococcus aureus* is one of the most important pathogen of nosocomial infections and common complication during treatment of chronic wounds. Although antiseptics have lower potency to induce bacterial resistance than antibiotics, concerns have been expressed regarding their overuse and the emergence of adaptation. We have used an experimental system employing lasernephelometry to test adaptation of *S.aureus* to continued treatment with antiseptics.

Methods: The antiseptics polihexanide, chlorhexidine, PVP-iodine, silver nitrate, and octenidine and the antibiotic mupirocin have been tested. *S.aureus* growth was investigated by lasernephelometry and the respective IC_{50}'s were determined. Subsequently, *S.aureus* was repeatedly incubated with the antiseptics for 100d. Influence of continued treatment was determined by calculation of the current IC_{50}.

Results: A fast increase of the antibiotic's IC_{50} was observed while antiseptics showed low potency to induce adaptation in *S.aureus*. A slight rise of the IC_{50} was observed for polihexanide and chlorhexidine over time and octenidine and PVP-iodine showed a minor decrease. In contrast, the IC_{50} of silver nitrate increased.

Conclusions: Growing use of antiseptics may result in bacteria that are less susceptible. As wound dressings with antiseptics are utilized for treatment of colonized or infected chronic wounds, it is of interest to determine the risk of triggering resistant microbes. In the present study, it could be shown that commonly used antiseptics have a low potency to induce bacterial adaptation. Only the IC_{50} for silver nitrate of the group of antiseptics was found to increase with repeated treatment of *S. aureus*.

Infection

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IN VITRO EVALUATION OF POLIHEXANIDE: BIOCOMPATIBLE AND EFFECTIVE

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Aim: Infection is the main cause of delayed healing and may lead to formation of chronic wounds. Therefore, wound dressings with antimicrobial agents are increasingly utilized for treatment of critical-colonized or infected chronic wounds. Polihexanide is regarded first choice because of its good skin tolerance beside its antimicrobial effects. We have evaluated the effect of polihexanide on wound healing using different *in-vitro*-systems.

Methods: Antimicrobial effect of polihexanide was determined employing lasernephelometry, suspension tests (JISL1902:2002) and a co-culture system with HaCaT keratinocytes and *Staphylococcus aureus*. Keratinocytes were also used for biocompatibility studies. To test the adaptation of *S.aureus* to polihexanide the microorganism was repeatedly incubated with the respective IC_{50} for 100d. Additionally, the antioxidant capacity of polihexanide was measured in a luminescent assay.

Results: Due to its antimicrobial activity polihexanide was able to prevent bacterial damage to human cells and restored normal cell proliferation. No adaptation of *S.aureus* to polihexanide could be observed. Furthermore, a distinct antioxidative effect of polihexanide was found.

Conclusions: Polihexanide seems to be an ideal antimicrobial substance in wound dressings for treating chronic wounds because of its low cytotoxicity, good skin tolerance and positive influence on proliferation. The addition of polihexanide to a co-culture of HaCaT keratinocytes and *Staphylococcues aureus* protects the cells from the bacterial damage and allows normal cell growth. The observed antioxidative effect of polihexanide is an additional beneficial attribute as exudates of chronic wounds contain elevated levels of reactive oxygen and nitrogen species (ROS/RNS).

Infection

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THE TIME RELATED CHANGES OF MICROBIAL COLONIZATION OF BURN WOUNDS AND BODY FLORA

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Aim: to investigate the concordance between swab and tissue biopsy samples, their time related changes and the importance of the colonization of the other body regions by some pathogens in the development of infection in burned patients.

Methods: the prospective study was carried out. 36 patients with burn wounds who met the inclusion criteria were enrolled in the study. We took wound surface swabs, biopsy and swabs from nasal, inguinal region, intact skin on 1st, 7th, 14th post burn day.

Results: during the first week after burn trauma surface swab showed the same results as wound biopsy in 83 % of cases. The concordance between semiquantitative and quantitative swab were 83 % on 1st post burn week. 61 % of swab results were similar to wound biopsy after the 1st week. Wound biopsy allowed to evaluate clinical significant growing of bacteria in the wound and possibility of invasive infection. The intact skin flora corresponded the pathogen in the wound in 66 % of cases on 7th day. Later frequently isolated bacteria were gram negative microorganisms, in 50 % cases similar to perineum region flora, especially if the wounds were in the lower part of the body.

Conclusions: swab sampling can be a good method for monitoring burn wounds within the first post burn week. Wound biopsy yield valuable information about the invasion of microorganisms.The changes of wound colonization could be related with skin and gastrointestinal tract flora.

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EFFECTS OF ULTRASONIC AND A HIGH-POWERED PARALLEL ORIENTED FLUIDJET HYDROSURGERY DEBRIDEMENT INSTRUMENT* ON BACTERIAL BURDEN

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Introduction: Venous leg ulcer in Europe occurs with an incidence of approximately 2% of the total population. One of the basic therapy is treating wound bed – removing a necrotic and fibrin tissue. Beside classic debridement methods (surgical, autolytic, enzymatic, biological) mechanical debridement is incessantly in use. There are two kinds of mechanical debridement, namely ultrasonic and hydrosurgery debridement.

Method: we formed two groups of ten patients with chronic leg ulcers in each group. In first gropu debridement were performed using ultrasonic debridement equipment, and in other group with hydrosurgery debridement equipment. An ultrasonic assisted wound treatment system equipment** and a high-powered parallel oriented fluidjet hydrosurgery system* were used. Before treatment wound tissue biopsy were taken from three wound sites for microbiological examination and measuring of viable bacterial number (CFU). The same procedure was performed immediately after debridement.

Results: analysis of results showed that viable bacterial number in wound tissue significantly decrease in both group. In 35% there were no bacteria in biopsy, and in other cases CFU were decreased in average of 75%.

Conclusion: mechanical debridement, when is painstakingly performed, not only remove necrotic and fibrin tissue, it's also significantly reduce viable bacterial number in wound. This results in reduced antibiotic administration and creating adequate environment for wound healing progress.

*Smith&Nephew VersaJet,
** Söring Sonoca-185

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ANTISTREPTOLYSIN-O TITER IN THE MICROBIOLOGICAL DIAGNOSIS BETA-HEMOLYTIC STREPTOCOCCI IN SUBCUTANEOUS TISSUE INFECTIONS?

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Objective: The utility of serologic tests in the microbial diagnosis of soft tissue infections is unknown.

Methods: Retrospective data from patients with musculoskeletal and soft tissue infections in whom antistreptolysin-O (ASO) serum titer was performed.

Results: A total of 5 patients with soft tissue infections due to beta-hemolytic streptococci of group A, C, and G were compared to 7 other patients with soft tissue infections due to non-streptococcal pathogens, mostly Staphylococcus aureus. The betahemolytic streptococcal infections had all elevated ASO titers (cut-off 200 U/ml; median titer 600 U/ml, range 300-800 U/ml), whereas no patient in the control group had elevated ASO titers. The pathogens documented in the patients with elevated ASO titers were S. pyogenes (β-hemolytic streptococci of Lancefield group A; n=3), β-hemolytic streptococci of group G (n=1) and β-hemolytic streptococci of group C (n=1). The elevated titers reached a plateau between day 8 and day 18 of infection. All five patients with elevated ASO titers were treated with intravenous penicillin or amoxicillin.

Conclusion: ASO titer determination is inexpensive and accurate in the diagnosis of β-hemolytic group A, C and G streptococci. In patients with negative culture results and positive ASO titers antibiotics might be reduced to the narrowest spectrum, penicillin.

Basic Science

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ACTIVE PRINCIPLES OF ACTIVE HONEY* USED IN WOUND CARE

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Aim: Honey* has been used in wound care medical devices mainly because of its proven non peroxide anti-microbial activity. We investigated anti-microbial, immune stimulation and anti inflammatory principles of a range of indigenous honey** types to illustrate the efficacy of medical honeys are based on broader quantifiable biological activities.

Methods: Antimicrobial activity against gram+ve & gram-ve pathogenic strains was measured in a spectro-photometric growth assays; the immune-stimulatory activity was tested using human acute monocytic leukemia (THP-1) cells; and the anti-inflammatory activity of honeys has been tested using human neutrophils isolated from peripheral blood.

Results: The bacterial inhibition of honey is determined by 4 independent but synergetic active ingredients. The immune-stimulatory activity is not dependent on LPS content of the honey but correlates with honey floral source and age. The anti inflammatory activity is mediated by interception of inflammatory signalling pathways by inhibition of super oxide release from activated human neutrophils rather than chemical radical quenching.

Conclusions: Our work clearly demonstrates 3 factors contribute significantly to the utility of honey-based wound care clinical devices; a broad spectrum bacterial inhibition, an immune-stimulatory activity and an anti-inflammatory activity. This research may result in better honey screening and selection, product development, and quality assessment of medical honey devices

* New Zealand Manuka honey
** New Zealand honey types

Basic Science

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THE EFFECT OF ELASTICITY ON SUB-BANDAGE PRESSURE OF TUBULAR COMPRESSION BANDAGES: A RANDOMISED CONTROLLED TRIAL

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Aim: To estimate difference between the mean interface sub-bandage pressures of two multilayer compression bandage systems during supine position, standing, exercise and recovery.

Methods: An open-label, prospective randomised within person controlled trial. Inelastic and elastic compression bandages were randomised to opposite limbs of each participant. A pressure transducer measured sub-bandage pressures. The difference in interface pressure associated with the two different compression bandages was measured at level B1 during supine resting, standing, exercise and recovery. Participants: 42 healthy adult volunteers

Materials: Two bandage systems were applied from base of toes to just below knee and remained in place for the duration of the experiment. Elastic bandage consisted of three layers of graduated tubular bandage. Inelastic consisted of 100% cotton crepe bandage.

Results: Interface sub-bandage pressures varied according to different activities but the mean difference in interface pressures between the inelastic and elastic bandages was consistently at least 13 mmHg. Stiffness was 7.3 mmHg higher in the inelastic group (95% CI: 5.1 to 9.5). The estimated difference in amplitude of sub-bandage pressure during the exercise activity between inelastic and elastic bandages during exercise was 15.5 mmHg (95% CI 12.2 to 18.9).

Conclusion: In vivo interface sub-bandage pressures varied with the type of bandage and activity phase. Inelastic bandages had increased mean interface sub-bandage pressure when resting and recovering which was further increased when standing or exercising. Bandage stiffness and amplitude were greater for inelastic compared to elastic bandages.

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HEMOGLOBIN A1C AS AN INDEPENDENT PREDICTOR OF WOUND HEALING: A PRELIMINARY REPORT

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Aim: The purpose of this study is to determine if hemoglobin A1c can be used as an accurate predictor of wound healing.

Methods: A retrospective analysis of data gathered from multi-center, controlled, prospective, randomized FDA approved clinical trials is being conducted. Analyzed variables include age, gender, race/ethnicity, body mass index, duration of diabetes, initial wound size, and the method utilized to off-weight foot ulcers. Multilevel linear regression was utilized to examine the effect of hemoglobin A1C on the percentage of wound healing achieved at 12 weeks using SAS statistical software (version 9; SAS Institute, Cary, NC). The initial sample size was 458 subjects. To account for possible collinear variables, the models were adjusted based on significance ($P<0.05$). Variables that were significantly associated with the percentage of wound healing achieved at 12 weeks remained in the final model.

Results: The final linear regression model ($P<0.0001$) found that higher hemoglobin A1C levels were associated with lower percentages of wound healing ($P=0.05$), after adjusting for gender, body mass index, initial wound size, and method used to off-weight foot ulcers. This inverse relationship results in a reduction of 3% area of healing for every 1% increase in hemoglobin A1c.

Conclusion: The results of this preliminary analysis provide evidence that blood sugar control as measured by hemoglobin A1c has a direct effect in the process of wound healing. Maintaining controlled levels of hemoglobin A1c is an important underlying factor in the comprehensive approach to healing wounds.

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FORMULATION AND EVALUATION OF NOVEL ANTIMICROBIAL WAFERS FOR THE TOPICAL TREATMENT OF CHRONIC WOUNDS

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Aim: To formulate lyophilised wafers containing a selection of broad spectrum antimicrobial compounds and test their efficacy against common wounds pathogens using an *in vitro* wound model based on a modified disc diffusion method.

Methods: Lyophilised wafers were produced by casting karaya gels (1.5 ± 0.02 g) containing clinical concentrations of either neomycin sulphate (NS), povidone iodine (PVP-I), chlorhexidine digluconate (ChD) or silver sulfadiazine (SS) into disc moulds and freeze-drying. The antimicrobial properties of the wafers produced were tested *in vitro* using nutrient agar plates inoculated with 5×10^5 cfu/ml methicillin resistant *S. aureus*, *E. coli* and *P. aeruginosa*. Microbial inhibition and wafer expansion were measured at 37°C for 24 hours and calculated as ratios of the initial wafer diameter. The relative adhesion of wafers to a 0.8% w/v agar surface, containing quantities of sodium and calcium ions typical of wound fluid, was also measured ($N.cm^{-2}$).

Results: Inhibition ratios ranged from 0 to 2.3, and NS, ChD and SS were effective against all bacterial strains although PVP-I did not produce an inhibition zone against *P. aeruginosa*. All wafers formed weak gel networks, swelling with expansion ratios ranging from 1.05 to 1.20. Adhesive forces varied from 0.10 to 0.25 $N.cm^{-2}$, the control wafer displaying the highest value and PVP-I the lowest.

Conclusions: The efficacy of antimicrobial wafers against common wound pathogens was apparent although adhesion decreased with the inclusion of antimicrobial compounds.

Basic Science

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EFFICACY OF ANNONA SQUAMOSA LEAF EXTRACT ON DIABETIC WOUND HEALING IN RATS

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Aim: The aim of this study is to evaluate the wound healing potential of the ethanolic extract of Annona Squamosa in diabetic condition.

Methods: Male albino rats were chosen for this study. Diabetes was induced by administrating a single dose of alloxan (80mg/kg) intraperitoneally. Animals with blood glucose level of ≥ 200mg/dl were considered diabetic. The animals were divided into 4 groups of 6 animals in each group. A 2 x 2 cm full thickness excision wound was made on the back of the rats. Group I and II (non diabetic) were treated with 200 µl of 50% alcohol and ethanolic leaf extract respectively, once daily until the wounds healed completely. Group III and IV (diabetic) were also given the same treatment once daily until the wounds healed completely. The wound tissues removed on different days were used to analyse biochemical and pathological changes.

Results: The extract increased cellular proliferetion and collagen synthesis at the wound site. Improved rates of wound contraction, epithelialization (21 days for control, 26 days for diabetic control, 22 days for diabetic + extract treated wounds) were observed. The tensile strength of the wounds of Group IV was significantly improved (47%) when compared to Group III. Extract also decreased the levels of lipid peroxides in the wound tissue.

Conclusions: The wound healing potential of Annona squamosa in diabetic condition has not yet been revealed. This investigation substantiates the beneficial effects of the topical application of Annona squamosa in the acceleration of diabetic wound healing.

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INFLUENCE OF NEGATIVE PRESSURE WOUND THERAPY (NPWT) ON FIBROBLASTS IN 3D-CULTURE

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Aim: NPWT has been shown to be clinically effective for treatment of chronic-stagnating wounds. However, the exact mechanism of action on wound healing remains to be elucidated. We have established an *in-vitro*-model for NPWT using fibroblasts in a 3D-culture-system to investigate the influence of NPWT with different wound dressings on cell viability and migration.

Methods: Fibroblasts were seeded on collagen pellicles and cultured for 14d. The dressing samples (AM-gauze*, large-pored-foam**) were placed on the cultures positioned in a 6-well plate and sealed with a vacuum-applicator-lid (VAL). VALs were connected to medium supply and vacuum pump. Experiments were carried out at -80mmHg and -120mmHg for 48h. Cell viability and ingrowths of cells into samples was determined.

Results: NPWT decreased fibroblast viability compared to static controls. No difference between -80mmHg and -120mmHg was observed. Cells responded to the subatmospheric pressure by migrating in direction of the applied vacuum. Wound dressings affected cell migration differently; under AM-gauze* cells were localized at the pellicle edge, while cells continued to migrate into the large-pored-foam**.

Conclusions: This study suggests that the positive effects of NPWT may result from the recruitment of cells to the wound site, where they contribute to formation of granulation tissue. The dressings used for NPWT exhibit different effects. While fibroblasts did not migrate into the fine-grained AM-gauze*, they showed a significant tendency to grow into the large-pored-foam**.

*KerlixAMD/Kendall, **V.A.C.GranuFoamDressing/KCI

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THE PERSPECTIVES OF APPLICATION OF THE ANTISEPTIC* TO PREVENT MICROBIAL BIOFILM FORMATION ON THE HUMAN CELL CULTURE MODEL

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Aim: To evaluate the influence of a polihexamide wound-rinsing solution* (solution and gel) on the microbial biofilm formation on the human fibroblasts cell culture model.

Methods: The test-strains of St. aureus ATCC 6538, E. coli ATCC 25922, Ps. aeruginosa ATCC 15442, C. albicans ATCC 15, Proteus vulgaris ATCC 5896 were used to evaluate the bactericidal and antiadhesive effect of the polihexamide wound-rinsing solution*. In our tests the sub-bactericidal concentrations of the antiseptic were obtained in nutrient medium. After that the tests were led to evaluate the influence of these concentrations on the microbial strains adhesive activity, speed of microbial biofilm formation as well as the antitoxic effect on the cell monolayer.

Results: After the co-incubation within 4 hours with the polihexamide wound-rinsing solution* the whole fibroblasts monolayer was observed in comparison with the tests without antiseptic. The adhesive effect of the test-strains was 50-80% less than in control tests.

Conclusions: The polihexamide wound-rinsing solution* (solution and gel) possesses the high bactericidal effect in respect of test-strains (St. aureus, proteus vulgaris, Ps. aeruginosa). The non-bactericidal concentrations of the polihexamide wound-rinsing solution* inhibit the adhesive activity of microorganisms as well as possess the antitoxic activity, preventing the damage of fibroblasts monolayer by survived St. aureus cells and destroy of cell culture by survived Gr (-) bacteria.

* Prontosan®

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33% APPROPRIATE WOUND DRESSINGS TO 100% IN 6 MONTHS: A PRE AND POST INTERVENTION STUDY

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Method: Pre and post intervention study.

Every wound (n=15) in a unit was assessed and current wound management regime was recorded before and after an education package was implemented. To reduce bias an expert panel from the wound care industry panel decided if the dressing was appropriate or not.

Results: Pre intervention there was 33% of wounds with an appropriate dressing and post intervention there was 100%.

A costing and time and motion exercise was carried out for the five most common regimes and the more appropriate regime, this revealed that nurses were wasting 200 minutes per day (=13K per annum) and differences between the two regimes = £28K per annum. Table 1.

Table 1

Inappropriate dressing costs pre-intervention

Dressing	Cost Difference (£)	Time Difference (minutes)
1	2.55	10
2	65	120
3	4.21	20
4	2.94	20
5	3	30
Daily total	70.70	200
Per Annum	28K	13K (cost of nurses time)

Discussion/Conclusion: With today's financial restrictions nurses must ensure that valuable NHS resources are not used inappropriately. This project revealed that the practice of inappropriate woundcare had the potential to cost the NHS billions of pounds. An education programme was implemented to address this by equipping nurses with wound care and product knowledge. This resulted in a complete reduction in inappropriate use of dressings.

Dressings

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PROSPECTIVE DOUBLE BLIND RANDOMISED EVALUATION OF NON-HEALING WOUNDS WITH EXPOSED BONES AND TENDONS TREATED WITH CHARGED POLYSTYRENE MICROSPHERES

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Aim: To evaluate a new treatment modality using charged polystyrene microspheres (CPM) for the treatment of recalcitrant wounds among specialists.

Material and Methods: A prospective randomized double blind controlled clinical trial was undertaken using CPM vs saline (standard of care) in the treatment of recalcitrant chronic wounds. The patients were treated with charged polystyrene microspheres or saline for 4 weeks twice daily and then as per investigator's recommendation for an additional 8 weeks. Patients were treated on an outpatient basis and regularly evaluated. The primary endpoint was to achieve statistically better rates of granulation tissue (>75% coverage) in wounds using CPM after 4 weeks of active treatment. Among the secondary endpoints were decreases in wound size, and closure rates.

Results: 66 patients were randomized into the two groups and 58 completed the first 4 weeks of the study (31 CPM, 27 Saline). More CPM patients achieved >75% granulation tissue (65% vs. 19%, p= 0.0006), CPM patients had greater 4 week surface area reduction (40% vs. 15%, p = 0.02). This trend continued in the 8 week follow up period. Additionally, 5 of 7 patients with exposed bone/tendon achieved 4 week >75% granulation compared to only 1 of 3 subjects in the control group.

Conclusions: Treatment with CPM* was found to be safe and effective in promoting granulation tissue and reducing wound size in chronic lower extremity wounds. We look forward to further work to confirm or refute these initial promising findings.

*Polyheal

Dressings

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ASSESSMENTS VERIFY SIGNIFICANT IMPROVEMENTS OF AN ADHESIVE FOAM WOUND DRESSING

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Aim: A manufacturer improved exudate management of their adhesive foam dressing. Bench/healthy sujects studies to assess improvements are ongoing.

Methodology: Bench studies measured moisture vapor transmission rates (MVTRs) according to ASTM E-96-80.

Clinical studies assessed wear time with artificial wound fluid (12.0 ml injections/day against current product for 4 days and against competitor product for 7 days using 12 and 24 subjects, respectively). Time-to-failure (product delamination/leakage/lift to pad/ fall off/migration) were compared. Comfort/pain (0 comfortable - 10 uncomfortable) was assessed in 24-subjecs with improved, current, and competitor products worn for up to 7 days.

Results: The improved dressing compared to the manufacturer's current product showed dry MVTR improved from 800 ± 100 to 1100 ± 100 g/m2/24 hours. Wet MVTR improved from 1,900 ± 700 to 12,800 ± 1,900 g/m2/24 hours.

The median survival times were significantly longer for the improved dressing compared to the current dressing and competitor dressing (>4.0 vs 3.0 days in the 4-day study, 6.1 days vs 3.5 days in the 7-day study).

No significant differences were detected with comfort reported upon dressing removal and during wear. Mean scores < 3.

Conclusions: The improved dressing stayed on longer than current and competitor product under simulated high-exudating conditions. This may be due to improved MVTR. There were no differences in comfort/pain reported.

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PROMOTION OF HEALING, PAIN RELIEF, TOLERABILITY AND QUALITY OF LIFE: RESULTS OF A PROSPECTIVE, CONTROLLED, RANDOMIZED COMPARISON STUDY WITH TWO WOUND DRESSINGS IN OUT-PATIENTS WITH NON-INFECTED LEG ULCERS

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Aim: In a pilot study with CE-marked medical devices (applied in their intended use) the efficacy and tolerability of different short stretch multilayer compression systems as well as of two different wound dressing systems in out-patients with non-infected leg ulcers over three months were proven. The aim was to compare the efficacy of two different wound dressings, a hydrobalanced cellulose based dressing* versus a foam wound dressing** with Ibuprofen.

Methods: • Clinical, experimental, randomized, bicentric, prospective, controlled comparison study with out-patients

• Proof of concept study (feasibility study)

• Main parameters: pain reduction (Visual Analogue Scale 0-10), quality of life, wound size reduction or healing time

Results: In general, a fast shift of the wound phases from inflammation via granulation to epithelisation was observed, but by the treatment with the hydrobalance wound dressing* a faster onset of wound healing, a shorter healing time and a faster pain reduction were seen. Furthermore, the hydrobalance wound dressing* showed an excellent tolerability in comparison to the foam with ibuprofen**.

Conclusion: The combination of wound moist dressing and a compression device exerting a strong interface pressure was effective in promoting wound healing. In this respect the hydrobalance wound dressing* seems to produce a better outcome.

* Suprasorb® X + Lomatuell® (secondary dressing) (Lohmann & Rauscher)
** Biatain® IBU (Coloplast)

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REDUCTION OF INFECTION AND PAIN IN CHRONIC WOUNDS USING A NEW ANTIMICROBIAL FOAM DRESSING

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Aim: Chronic wounds are invariably colonized by polymicrobial flora. Bacterial damage can be caused by a superficial increase in bacterial burden or infection in the deep and/or surrounding tissue. The purpose of this study is to evaluate the effectiveness of a Polyhexamethylene Biguanide dressing on bacterial burden and wound healing.

Methods: A multi-center, prospective, randomized, double blind, pilot clinical trial was conducted evaluating subjects with chronic wounds. This study compared the clinical performance of a Polyhexamethylene Biguanide (PHMB) impregnated foam dressing to a similar non antimicrobial foam dressing. Forty-five subjects, stratified to either foot or leg ulcers, were followed for 5 weeks (Weeks 0, 2, 4). The three study visits documented pain and local wound characteristics.

Results: The use of PHMB foam dressing was a significant predictor of reduced wound superficial bacterial burden (p=0.0162) at Week 4 as compared to the foam alone. Pain reduction was also statistically significant at Week 2 (p=0.0006) and at Week 4 (p=0.0225) in favour of the PHMB foam dressings. Polymicrobial organisms were recovered at Week 4 in 5.3% in the PHMB foam dressing group versus 33% in the control group (p=0.0411). Subjects randomized to the PHMB foam dressing had a 35% median reduction in wound size by Week 4, compared to 28% in the control group.

Conclusion: PHMB foam dressing was effective in reducing superficial bacterial burden in chronic wounds and decreasing wound surface area. No adverse effects were reported.

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1. Sibbald RG, Woo K, Ayello E. Increased bacterial burden and infection: the story of NERDS and STONES. Advances in skin and wound care 2006; 19 (80:447-61).

Disclosure Statement:
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Dressings

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COMPARISON OF THREE DRESSING STRATEGIES FOR HEEL ULCERS: OUTCOME AND COST-EFFICIENCY RATIO

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Aim: Arterial disease or diabetes increases the risk of osteomyelitis and amputation associated with heel ulcers. The efficacy and cost-efficiency of three heel ulcer dressings were compared: standatd care (SC) (any other dressing), padded heel dressing (PHD) (reduce pressure), and PHD plus protease modulating matrix* (PP).

Method: An 'intent-to-treat, retrospective random selection of sixty ulcers: twenty each group. Outcomes measured were: ulcer closure, weeks to close, nursing visit cost, and cost-efficiency-ratio. Same wound care for all groups: moist wound healing, debridement, and monitoring.

Results: Wound closure difference was significant between the SC (13, 65%) and both PHD and PP (both 100%) (Chi-Square P<.000). Significant difference existed between mean nursing visits (p<.001) with SC 42.23, PHD 25.73 and PP 18.38. The number of weeks treatment for SC (14 closed, 2 amputations, 4 lost contributes to underestimate) was 527, PHD 368 and PP 237. Nursing costs at $155/visit (Canadian) was SC ($114,080), PHD ($73,470) and PP ($40,610). Cost-efficiency-ratios are PP (1), PHD (1.8) and SC (2.8). Number of ulcers probing to bone and outcome was: SC (4, 2 closed, 2 amputations), PHD (3, closed) and PP (5, closed). Weeks to close bone depth ulcers averaged 82 (SC), 42 (PHD), and 15 (PP).

Conclusion: The PP group closed faster inspite of 50% bone depth and cost a third of SC and nearly half PHD.

*protease modulating matrix – Prisma or Promogran (Systagenix)

Dressings

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THE IMPORTANCE OF STANDARDISING IN VITRO EVALUATIONS WHEN DETERMINING THE SILVER-RELEASE PROFILE OF ANTIMICROBIAL WOUND DRESSINGS

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Despite the abundance of silver-containing dressings to treat chronic wound infections, there is no standard method to evaluate their silver-release. This is compounded by the use of water or saline to elute silver from such dressings, which give different results and do not reflect the composition of wound exudate.

Aim: To develop a method using an artificial wound fluid (AWF) medium to mimic the release of silver from silver-containing dressings in exudating wounds.

Method: The silver-release profile of two elemental and two compound silver-containing dressings was determined using atomic absorption spectrometry (AA). Dressing samples were placed in either AWF containing albumin, de-ionised water, or solutions containing chloride salts and incubated in a water bath at 37^{o}C, 60 rpm for 7 days. The solution was replaced periodically with an equal volume of fresh fluid: spent solution was retained for AA analysis.

Results: Results demonstrate that the amount of silver released/detected for all dressings was substantially higher with AWF than with water or solutions containing chloride salts. We believe this is due to the presence of protein and various ions in wound fluid, which can affect silver solubility.

Conclusions: The amount of silver released from dressings tested differed according to the elution solution. We propose that an AWF containing albumin more closely mimics the composition of an exudating wound than other solutions, and should be used when evaluating the silver-release of dressings.

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A COMPARATIVE RETROSPECTIV CLINICAL STUDY BETWEEN TWO DRESSINGS FOR SURGICAL USE

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Aim: To find a good, easily removable dressing for surgically use.

Method: This is a retrospective study, where we compare a HydroBalanced cellulose based wound dressing (Group A) with a hydrophobic dressing with dialkyl-carbamoyl-chloride (Group B). There were included 60 patients with 30 patients in each group. At the operation the wound-bed was treated either with a dressing from Group A or Group B.

Gauze was used as secondary dressing on all patients.
The day after the operation the dressings were changed and registration took place.

Results: The types of operations were very similar in the two groups. The operations fell into 3 categories.

Pain levels were rated by the patient when the dressing was removed:

No pain: 21/8, mild pain: 9/9, moderate pain: 1/8, severe pain: 0/5, unbearable pain: 0/0 patients.

Did the dressing adhere to the wound-bed: Yes: 7/27

Was it necessary to soften up the dressing: Yes: 3/16

Were there any exudates in the wound-bed: No: 25/26

Were the surroundings of the wound wet/macerated: Yes: 7/11

All dressings could be identified.

Conclusion: This study shows that the dressings in both groups have good control of exudates without macerating the skin surrounding the wound. Both dressings are easy to identify, with no remains deposited in the wound.

However, when it comes to pain levels and adhesion to the wound-bed, the dressing in Group A has an excellent preference.

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TO CARE FOR PATIENTS WITH HARD-TO-HEAL WOUNDS HOMECARE NURSES' NARRATIVES

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Aim: To describe how nurses in homecare experience the care of patients with hard-to-heal wounds.

Method: This study has a lifeworld phenomenological approach. Seven nurses in homecare were interviewed. The data was analyzed in terms of meaning.

Results: Four themes emerged. To be responsible means both to heal the wound and relieve the patient's suffering. In this respect, good care depends on inter-professional collaboration, but the nurses ascribe the physicians a lack of interest. To be respectful means a shift in focus from wound to person to holistically confirm the patients. To feel secure in order to provide security means that the nurses want patients to experience confidence in their care, so they must experience professional confidence themselves. There are also temporal and spatial meanings in this: the caring relationship is more likely to be personal if frequent caring events take place in their home contexts. However, the caring relationship should be professional and personal but not private. This invisible border must be emphasized.

Conclusions: Nurses need wound treating competence from education as well as clinical support in their daily care. Preferably, there should be some sort of mentoring that offers opportunities to professional reflections on care. Finally, the shared responsibility between nurses and physicians needs improvement.

Education

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A NOVEL WAY TO PROVIDE LEG ULCER EDUCATION FOR NURSES IN A RURAL AREA

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Aim: There are many challenges facing tissue viability education for nurses in the United Kingdom. They relate to the cost of the education, the ability to obtain study leave to attend courses and the local availability of relevant courses.

In light of the changes in the approach and terminology suggested in the World Union Consensus Document on Compression Therapy. A specific requirement for education on the assessment and management of people with leg ulceration had been identified by a healthcare provider in North Wales. However the health care provider covers a large rural geographical area and it can take 3 - 4 hours for nurses to travel to the education facilities. This combined with an 8 hour study day makes the educational proposition rather uninviting.

Method: Therefore the local university educator approached industrial partners to secure access to their educational facilities. They helped to provide a temporary rural educational facility. This was utilised on an Island off the North Wales coast and facilitated the teaching of leg ulcer assessment and management using traditional lectures combined with demonstrations and small group workshops.

Conclusion: The joint working enabled education to go the nurses rather than the nurses having to travel excessive distances to attend courses. It demonstrates how clinicians and industrial partners can work together to provide education to meet the needs of local nursing communities.

Education

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NORTH-SOUTH PROGRAM FOR THE TRANSFER OF KNOWLEDGE ON WOUNDS AND HEALING

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Aim: A collaboration between a Nursing school and two treatment centers in Yaoundé (Cameroon) and a Swiss school was implemented in 2008 for an exchange of knowledge regarding wound treatment and healing.

Method: Two training methods were based on the program with application phases in the field to work through concrete exchanges in Cameroon.

The foundations of healing in a humid environment, the main principals of treatment and assessment of the state of the wound were the basis. New generation dressings were able to be introduced with parsimony. The essential elements of hospital hygiene and infection prevention were emphasized.

Results: Instructors and practitioners of two treatment centers collaborated to establish a model for wound monitoring and a reference table on the type of treatment depending on the stage of the wound.

Referent professionals noted on the field:
– faster healing and a decrease in pain in dressing repairs,
– patient satisfaction.

Conclusion: This program opened possibilities of the reflected introduction of new therapeutic approaches. However, the support for infection prevention rigor seemed essential regardless of the context. This support was already brought by Swiss students who completed an internship in Cameroon.

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AN INTERNATIONAL E-DELPHI STUDY TO DETERMINE THE RESEARCH AND EDUCATION PRIOITIES IN WOUND MANAGEMENT AND TISSUE REPAIR

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[5]*Community care (Dunlaoighre, Ireland)*

Background: The growth in the prevalence of chronic wounds, the growth in the range of wound care products and an increase in clinician attendance at conferences and education programs are compelling reasons to determine what the research and education priorities are in wound management and tissue repair.

Aims: To determine from an international and multi-disciplinary audience what the research and education priorities for wound healing and tissue repair are.

Methods: A four round eDelphi technique was utilised.

Results: 360 professionals representing all healthcare settings from 27 countries participated. The top research priorities related to identification of the diabetic foot, pressure ulcer prevention management of wound infection and wound bed assessment. The top education priorities identified related to standardization of all foundation education programmes in wound care; the inclusion of wound care in all professional undergraduate and postgraduate education programmes, selecting a dressing and prevention of pressure ulcers.

Conclusion: Professionals from all backgrounds and different countries engaged in wound management share a common set of priorities for research and education. The priorities identified, relate to clinical challenges in wound care and underpin the principles of good patient care practices. The priorities are closely allied to an ageing population and identify the many challenges ahead for practitioners engaged in wound management services.

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THE DEVELOPMENT AND PSYCHOMETRIC VALIDATION OF A PRESSURE ULCER PREVENTION KNOWLEDGE INSTRUMENT

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Aim: Insufficient knowledge may result in inadequate pressure ulcer prevention. An instrument might be used to assess knowledge. The aim of this study was to develop a pressure ulcer knowledge instrument. A prospective psychometric instrument validation study was designed.

Methods: A review of national and international guidelines and a double Delphi procedure with 10 trustees of the European Pressure Ulcer Advisory Panel was used to develop 26 multiple choice questions. Content and face validity, validity of the multiple-choice test items (item difficulty, discriminating index, quality of the response alternatives), construct validity, internal consistency, and stability were evaluated. 608 nurses and nursing students from Belgium and The Netherlands participated in the psychometric evaluation. Data were collected between February and May 2008.

Results: 26 multiple choice questions, divided in five themes, were developed (themes: aetiology/development, classification/observation, nutrition, risk, and preventive measures. The content validity was excellent (CVI=0.78–1.00). The item-difficulty index ranged from 0.27 to 0.87. Item discrimination ranged from 0.29 to 0.65. The internal consistency reliability (Cronbach's alpha) was 0.77. The 1-week test–retest intraclass correlation coefficient was 0.88. A significant difference was observed between mean scores of pressure ulcer experts and non-pressure ulcer experts ($p<0.001$).

Discussion / Conclusion: A knowledge instrument was designed based on a rigorous construction process. The psychometric evaluation showed acceptable reliability and validity properties. The instrument can be applied in nursing education, research and practice to evaluate knowledge about pressure ulcer prevention.

Education

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ADHERENCE WITH LEG ULCER LIFESTYLE ADVICE': A PROMISING NURSING INTERVENTION FOR COMMUNITY CARE SETTINGS

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Aim: To examine changes associated with an intervention to enhance adherence to wearing compression, leg exercises, physical activity and leg elevation.

Methods: Twenty-six leg ulcer patients received the intervention from five tissue viability nurses carried out in 3 to 5 individual sessions at home. Patients were informed about leg ulcer lifestyle and were involved in goal setting and in formulating strategies to enhance adherence.

Qualitative and quantitative data were collected in conducting in a pretest–posttest study.

Interviews were held with patients after the intervention. Data were also collected on:

Frequency and duration of wearing compression (diary), exercises and elevation (diary), activity level (accelerometer), pain (verbal scale) and ulcer size (tracings) were registered. Quantitative data collection took place at baseline, at the end of the intervention and three months later.

Results: Knowledge about leg ulcer advice increased. Performing leg exercises was new for most patients. The relationship between the advice and healing or recurrence remained often unclear. Patients reported creative strategies to incorporate advice in daily life. During the intervention, they often looked out onto a 'new' perspective in which again healing and/or enhancement of quality of life might be attainable. In a few patients independence was enhanced after learning how to apply/remove compression garments themselves.

More patients performed leg exercises after the intervention ($P<0.001$) and at follow-up ($P=0.003$). The duration of exercising increased from not exercising to 14 minutes/day after the intervention ($P<0.001$) and 13 minutes three months later ($P=0.003$). Step counts did not alter. Patients not elevating the legs at baseline, elevated the legs more ($P=0.03$) and for a longer period ($P=0.04$), only after the intervention. No significant changes were reported on hours wearing compression.

Conclusion: The intervention resulted in behavioural change. The perceived changes suggest that it holds a promise for current home care.

Education

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POLITICS, RESOURCES, OUTCOMES AND ACTIONS: A REAL-TIME SYNOPSIS IN AN ELDERLY CARE UNIT

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Aim: Compliance with standards of care is vitally important in the NHS, and provision of timely and reliable information about quality of care is essential to secure commissioned services. This study describes ongoing work in an acute care facility to address care quality and safety issues.

Method: The acute elderly care unit in a large NHS teaching hospital identified a deficit in service provision for tissue viability and ring-fenced funding for dedicated tissue viability specialist support. Baseline audits were completed for pressure ulcer prevalence, wound prevalence, wound infection, and staff knowledge.

Results: High pressure ulcer prevalence

Poor staff knowledge of prevention

High wound infection rates

Limited knowledge of latest treatments

Concerns were raised about the high cost of silver dressings and iodine sensitivity in patients with fragile skin.

Conclusions and outcomes: A strategy was agreed to empower staff to better support their patients through a number of measures including creative education, 'lean management' techniques, and the introduction of PHMB as an alternative, cost effective topical antimicrobial.

It is anticipated that these strategies will become the benchmark of quality to other areas in the organisation.

Targets have been set to improve hospital acquired pressure ulcer prevalence by 10% per quarter, to ensure that all staff complete the educational programme by Q3, and to improve the wound dressing spend. Quarterly audits will be undertaken to demonstrate tangible improvements.

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PRACTICE DEVELOPMENT NURSING IN WOUND MANGEMENT: A MODEL OF CARE

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Aim: This presentation will discuss the role of the Practice Development Nurse in Wound Care in a multicultural rapidly growing healthcare system.

Methods: With an increase in the population and growth of a city comes the expansion of healthcare services in all sectors. This city is known for its multicultural diversity, which creates challenges for healthcare professional to provide high quality care. This is especially true of wound management. The practice of modern wound management in this region faces many difficulties which include inequalities of both provision of and access to services, fragmentation between primary and tertiary health care provision, a patriarchal medical model, lack of professional regulatory framework and sharply differing levels of education and experience among health professionals.

Results: In November 2008 a Practice Development Nurse (PDN) was hired into the department of surgery with the main focus to evaluate and improve wound management in the organization. This resulted in a model of care developed by the PDN to provide the framework required to improve the quality of wound management to the organization and the community.

Conclusion: Presentation of this model will be discussed along with the successes and challenges of working within such an environment. The progression of wound management practices since the inception of this role will also be highlighted.

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NUTRITIONAL ASSESMENT AS A PART OF COMPREHENSIVE APPROACH TO THE CHRONIC WOUNDS TREATMENT

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One of the most important criterion which should be evaluated by the patients with the chronic wounds is their nutritional condition. There is no evidence that nurses are able to do nutritional assessment in a properly way. In the special educational course for nurses we have been evaluated in total 126 students – nurses (knowledge concerning the nutritional assessment).

Aim: To ensure the knowledge of nurses concerning the nutritional assessment. According the results of the survey prepare „user friendly“ assessment tool for the nutritional assessment.

Methods: Questionnaire survey among 126 nurses focused on the knowledge of the nutritional assessment by the patients with chronic wounds.

Results: The most of the respondents (96%) does not know any assessment tool of the nutritional status for the patients with chronic wounds. 100% respondents wants to have usable assessment tool with instructions for the following wound and nutritional care (manual). There was no significant relation among the educational level, years of professional career and level of the knowledge of the respondents.

Conclusions: Nutritional assessment is not common in the clinical practice even if the malnutrition is a big risk factor which influence wound healing process. Nurses involved in the survey do not have enough knowledge concerning the nutritional assessment of the patients with the chronic wounds. The Mini Nutritional Assessment could be modified in the wound management also as a manual for following wound and nutritional care.

Country Perspectives

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HOSPITAL MANAGMENT WOUND COORDINATOR

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Activating Coordination Nurse For Pressure Sores Treatment

Background and basic rationale: The development of pressure sores constitutes a well known problem in hospitals throughout the world and is considered an index of quality care.

The nurse plays a central role in the prevention and treatment of pressure sores, it was decided to train and authorize registered nurses, of the prevention and treatment of pressure sores.

Aims:
- To reduce the rate of pressure sore formation.
- To advance the quality of care regarding pressure sores.

Process of intervention.
1. Strategic decision to promote the issue:
   a. Role definitions of project coordinator on an administrative level
   b. Role definitions of person-in-charge on the departmental level.
2. Development of a dedicated forum including protocol and procedure.
3. Structuring and implementing work processes, documentation and dressing materials.

Results: A departmental nurse forum was established on regular basis meetings, for the purpose of ongoing education and updating.

Quality control checks were carried out on 2 separate occasions. These checks included: breakdown of patients at risk for developing pressure sores, risk evaluation, number of patients with pressure sores, documentation and intervention for all relevant patients.

Conclusions: We are proud of the process and are continuing to execute it. It enabled us to create a professional basis for the creation of a data base regarding the existing situation, its assessment and its advancement.

Country Perspectives

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SIXTY SECOND SCREENING IDENTIFIES PERSONS AT RISK FOR DIABETIC FOOT ULCERS IN GUYANA

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Aim: The 60 second screening assessment was developed by Shane Inlow (1) to help clinicians identify individuals who are at risk for foot ulcers. In 60 seconds, key factors can be identified based on patients' history, foot examination for skin breakdown or deformity, monofilament testing for loss of protective sensation, evaluation of joint stiffness and palpation for pedal pulse. In light of the growing concern in diabetes in Guyana, a screening tool was developed and implemented at a medical diabetic clinic at Georgetown Public Hospital Corporation, Guyana's only referral and teaching hospital. The purpose is to create a profile for this patient population and detect high risk individuals with foot complications.

Methods: 1000 consecutive patients were screened at the hospital using the 60 second screening tool.

Results: 40% of individuals screened were considered to be at a high risk. Of these high risk patients, 13% had previous ulcers; 5% previous amputation; 8.5% without pedal pulse; 7.7% an active ulcer.

Discussion: Screening of people with diabetes for high risk status is an essential component of comprehensive diabetes care. It focuses preventive practices and reduces workload for the treatment of foot ulcers and their complications and identifies unrecognized ulcers at an early stage. Screening and patient education to change behaviours are the keys to preventing diabetic foot ulcers. The 60 second tool has been adopted by the Ministry of Health in Guyana. Canadian persons with diabetes would benefit from the application of similar screening tools.

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INVOLVING THE FAMILIES IN THE TREATMENT OF ACUTE AND CHRONIC WOUNDS IN CYPRUS

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Background: At our wound care centre we focus on the interaction of the patient and family. A physician does the first assessment. A dedicated nurse is responsible for educating the family and organising the involvement of other professionals.

Our team consists of 3 physicians, social workers, psychologist, dietician and 10 community nurses. We covered nine thousands inhabitants. 11% of the population are above the age of 65.

Aim: To get the family involved with the treatment in order to ensure compliance, faster wound healing and correct long term care.

Method: Once the assessment is done we agree on a treatment plan with goals and time-limits together with the patient and family. The wound is reviewed weekly by the physician for the first month. Examples of wounds treated are gunshot wounds, leg ulcers, diabetes and pressure ulcers.

We usually recommend the use of polymeric membrane dressings as they help relieve pain and promote faster healing. They are so easy to use that the families can perform the dressing changes minimising our visits from daily to weekly.

Result: In most cases we manage to heal the ulcers within a few months. The family's help us achieve these goals as they become more involved and knowledgeable in the patients care.

Discussion: By involving the family we help them minimise the cost of care and they can use their economical resources on appropriate materials that enable faster wound healing, such as nutrition and wound-dressings.

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WOUND TREATMENT AND INTERDISCIPLINARITY, AN INCREDIBLE EXPERIENCE TO PROMOTE

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Since its founding, the Wound and Healing Group of the Loëx Hospital has not stopped welcoming new disciplines in its reflection on wound treatment.

It is made up of two structures. The first being a mobile team made up of a doctor and clinical specialist nurse. The second being a multidisciplinary team including all hospital interveners (physiotherapist, psychologist, bursar, chiropodist, ergotherapist, dietician, unit nurses…).

The goal of this partnership is to increase the efficiency of each professional by acquiring better knowledge of the others work.

Over the course of regular meetings, each professional brings their experience and skills and can share them by making their practice accessible. This exchange highlights resource individuals within each subject body and interdisciplinarity. The distribution of work is thus carried out by considering the limits and resources of each one. This group fully prescribes to the framework of continuing education with diversified workshops and interventions. The group occasionally welcomes external interveners to enhance the knowledge of its members. The professional mobility allows to reach more health care providers and multidiscipline health professionals and therefore transferring knowledge on all of the sites.

This organization sees to it, in a more efficient manner, that wound treatment is everyone's business in the hospital.

Acute Wounds

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SHOULD WE CONSIDER HYPERBARIC OXYGEN THERAPY FOR THE TREATMENT OF ACUTE WOUNDS?

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Aim: Hyperbaric oxygen therapy (HBOT) has been used to treat acute and traumatic wounds. However, its effectiveness is unclear.

Methods: We undertook a Cochrane systematic review. All randomised controlled trials (RCTs) comparing HBOT with other HBOT-regimens or other interventions in acute surgical and traumatic wounds were searched in relevant literature databases.

Each part of the review process was conducted by two authors independently. Primary endpoints were wound healing and adverse effects; main secondary endpoint was adverse effects.

Results: Three trials, totalling 219 patients, were included. The different outcome parameters prohibited meta-analysis.

In a British trial, HBOT was compared with usual care. HBOT resulted in a significantly higher percentage healthy graft area in split skin grafts (95% healthy graft area: Risk ratio [RR] 0.50; 95% confidence interval [CI] 0.30 to 0.83).

In a French trial, crush injuries treated with HBOT showed a quicker complete wound healing than with sham-HBOT (RR 0.13; 95%CI 0.02 to 0.90) and less need for additional surgical procedures: RR 1.60; 95%CI 1.03 to 2.50.

A Chinese trial on limb skin defects showed no significant differences.

Conclusion: Although there is insufficient evidence from this review to support the routine use of HBOT for patients with acute surgical or traumatic wounds, the application of HBOT on crush injuries may be justified if costs are acceptable and HBOT facilities are available at the time of presentation.

Acute Wounds

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WOUND COMPLICATIONS IN CLEAN ORTHOPEDIC SURGERY: RISK FACTORS AND ASSOCIATION WITH ANTIBIOTIC USE AND POSTOPERATIVE FEVER

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Objective: To assess the epidemiology of wound complications in adults seen in an orthopedic and traumatology unit, particularly the associated to antibiotic use and postoperative fever.

Methods: Single-centre, prospective observational study.

Results: Among 1073 patients (639 women, median age 70 years) participating in the study, 872 (81%) revealed wound complications: discharge (n=448; 42%), dehiscence (n=9; 1%), hematoma (n=384; 36%), persistent inflammation at Day 10 (n=164; 15%), necrosis (n=60; 6%), and surgical site infection (n=13; 1.3%). In multivariate analysis, missing compliance towards nurses' recommendations (Odds ratio 1.5, 95% CI 1.1-2.2), implant (OR 1.7, 1.1-2.7) and foot & ankle surgery (OR 2.9, 1.6-5.3) were the most pronounced risk factors for wound complications. Antibiotic-related parameters had no influence on wound complications. Staple use was a risk only for wound discharge (OR 2.5, 1.8-3.4). Postoperative fever (>38°C) was detected in 198 patients (18%) and was not associated with any wound complication besides hematoma.

Conclusions: Lack of patients' compliance, implant- and foot & ankle surgery, and staple use were associated with wound complications in orthopedic patients, whereas antibiotic use or postoperative fever were not.

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TOPICAL NEGATIVE PRESSURE IN THE TREATMENT OF DEEP STERNAL INFECTION AFTER CARDIAC SURGERY: 5-YEAR RESULTS OF FIRST-LINE APPLICATION PROTOCOL

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Aim: We sought to evaluate a single center experience for the application of topical negative pressure therapy (TNP) in the treatment of deep sternal wound infection (DSWI) following cardiac surgery.

Methods: Prospective analysis of 50 consecutive patients (29 men, 21 women, mean age 67.8±9.2 years) who underwent the first-line application of TNP in the treatment of DSWI within a 5-year period (from September 2004 to September 2009). Clinical and wound care outcomes were evaluated, therapeutic failure rate, in-hospital as well as the 1-year mortality of application protocol.

Results: During follow-up 4% of 30-day mortality, 8% of in-hospital mortality, and 14% of 1-year mortality (10% DSWI-related complication adjusted) were observed. The mean length of overall therapy reached 12.6±8.0 days including the mean of 5.2±2.1 revision/dressing changes within 38.1±14.6 days of the mean in-hospital stay. The sternal bone was stabilized in 94% of cases; various flaps were employed in covering of the residual soft tissue defect in 70% of patients. Treatment failed in 6% of all cases, 4% due to DSWI recurrence, and 2% due to necrosis of the advanced muscle flap.

Conclusion: TNP therapy is a reliable method for the treatment of DSWI. Its application demonstrated a low risk of failure and a significant decrease in short- and mid-term mortality.

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USE OF EXTRACELLULAR MATRIX (ARTIFICIAL SKIN) IN POST-TRAUMATIC MATTER LOSS IN THE HAND

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Introduction: The authors present the results of the use of an extracellular matrix, in post-traumatic matter losses of the hand. The advantages, inconveniences and indications are analyzed.

Patients and Methods: We operated 15 patients with this technique between 2004 and 2008. It was a series of 15 men. The average age was 40 years of age (between 7 and 87 years old). Our average recession was 12 months (between 4 and 37 months). In all cases, matter loss was associated to bone and/or articular and/or tendon exposure. The lesional mechanism includes domestic, do-it-yourself, highway and “ring finger” degloving accidents. The timeframe between the application of the extracellular matrix and the initial trauma was 12 days on average and the skin graft was 26 days.

Results: We had two cases of failure. The first concerns the covering of palmar skin necrosis following a “ring finger”, reprised by a dorso-commissural flap, and the second, an isolated palmar matter loss of the finger, small in size, with a poorly vascularized tendon sublayer. We had no infection or hematoma.

Conclusions: The short, medium and long term results were very satisfying in regard to the functional and aesthetic plan and completely adapted to the pollicidigital grip.

This surgical experiment in extreme cases of post-traumatic skin matter loss of the hand seems adapted for obtaining a stable, functional and aesthetic scar.

Acute Wounds

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A PROSPECTIVE OBSERVATIONAL STUDY ABOUT THE PERFORMANCE OF A POLYACRYLATE-SUPERABSORBER SATURATED WITH RINGER SOLUTION FOR THE TREATMENT OF SUPERFICIAL AND PARTIAL TO FULL THICKNESS BURNS

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Aim: Burns are acute wounds that depending on the time of exposure, mechanism of injury and body surface area affected lead to different local and systemic responses. Treatment of these injuries should include the evaluation of the causes of tissue damage, ensuring tissue perfusion, promoting debridement of necrotic tissue, bacterial control and exudate management. This multicentre prospective observational study aims to evaluate the effects of a polyacrylate-superabsorber saturated with Ringer solution in burn patients.

Methods: Twenty patients with acute burn wounds received treatment with the polyacrylate during a maximum of 2 weeks. Percentage of body surface area burned was evaluated at the first treatment and condition of the wound, pain, presence of infection and need for surgery were assessed every dressing change.

Results: In two patients with chemical burns it was observed almost a complete removal of the necrotic tissue after 2-5 days with a reduction of the inflammation. In one patient, where only half of the leg was treated with the polyacrylate and the other half with silver sulfadiazine (SSD), was notorious the difference between tissues with the area treated with SSD showing only necrotic tissue and the area treated with the polyacrylate showing signs of granulation and a decrease of the inflammation. All of the patients mentioned a decrease of pain during the treatment and a relief when the dressing was applied. A decrease of the local inflammatory response was visible in all of the patients. Only three patients required surgery in the operation theatre to remove the remaining necrotic tissue. There were no reports of infection.

Conclusions: The polyacrylate-superabsorber saturated with Ringer´s solution is an effective choice to treat burn wounds, helping to remove necrotic tissue and decreasing pain. The apparent anti-inflammatory properties of this dressing need to be further studied.

Wound Assessment

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WHAT IS THE BEST EVIDENCE WE HAVE REGARDING WOUND CARE? A META REVIEW

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Aim: Wound care is characterized by a wide variety of wound types and treatment options. Strong evidence of effectiveness is frequently lacking. We examined what evidence is actually available from systematic reviews (SRs).

Methods: All available SRs of randomized clinical trials (RCTs) related to wounds, except for those on prevention of surgical site infection, were extracted from the Cochrane library (Issue 4, 2009).

Results: Strong evidence was found for:

Acute wounds: 4/12 SRs (113 RCTs) showed the effectiveness of tissue adhesives for wound closure, potable water for wound cleansing. Prophylactic antibiotics for cat and dog bites showed no effectiveness.

Arterial ulcers: 1/2 SRs (13 RCTs) found spinal cord stimulation improves limb salvage and clinical situation.

Venous ulcers: 4/12 SRs (164 RCTs) showed bi-layer artificial skin and/or compression and pentoxifylline help healing. Type of dressing beneath the bandage does not matter. EMLA-cream is effective as analgesic during ulcer debridement.

Diabetic ulcers: 2/5 SRs (21 RCTs) showed hyperbaric oxygen avoids amputations, and hydrogel increases healing.

Pressure ulcers: no strong evidence from 5 SRs (16 RCTs).

Prevention: strong evidence was found in 1 of 5 SRs (69 RCTs): alternating pressure mattresses, medical-grade sheepskins, and pressure-relieving overlays for operating tables effectively prevent pressure sores.

Conclusion: Several strong, evidence-based recommendations for wound care are available. These can and should be applied by doctors and nurses to improve the quality and uniformity of wound care.

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CAN DOCTORS USE THE RED-YELLOW-BLACK SCHEME TO ACCURATELY CLASSIFY DONORSITE WOUNDS? AN INTER-OBSERVER ANALYSIS

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Aim: Uniform and correct judgment of donorsites is pertinent to medical decision-making and communication. A well-known scheme to classify chronic and acte wounds is the Red-Yellow-Black (RYB) scheme, based on wound colour and moistness. We examined whether this RYB-scheme is also applicable to donor sites.

Methods: Thrity-one photographs of donorsites in various stages of wound healing were presented to eleven international wound experts. They categorised these wounds into categories using the RYB-scheme, added by a category 'completely healed'. If the majority of experts agreed, the photopgraph remained in the set and the chosen category was considered as 'correct'. Subsequently, the remaining 23 photographs were judged by 25 doctors of our department of surgery. Inter-observer agreement (IOS) was expressed as a kappa (κ) value.

Results: Among experts, IOA was poor (κ=0.17, 95%CI: 0.11-0.24). IOA among doctors was also poor (κ=0.28, 95%CI: 0.20-0.37). However, photographs of healed wounds were classified correctly by 92% of doctors (95%CI: 66-100). Red&moist wounds were classified correctly by 63% of doctors (95%CI: 44-83). The remaining red&dry wounds were classified correctly by only half of the doctors. Experts as well as doctors hardly even classified a wound as 'black'.

Conclusion: Clinicians as well as wound experts have difficulty with classifying donorsite wounds by means of the RYB-scheme. Apparently, this scheme is not a useful tool to classify donorsite wounds in a uniform manner.

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RESEARCH PROJECT 'QUTIS 3D': WOUND DOCUMENTATION ON THE BASIS OF THREEDIMENSIONAL PATIENTS

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Aim: Traceability is one of the most important aspects in the treatment of wounds. Moreover, objectivity is the foundation of data quality and comparability of patients and their wounds. Therefore, a computer-aided system for structured and objective documentation is essential. By using such a system, an unambiguous acquisition of quantitative wound features can be achieved.

Methods: The primary demands of a modern computer-aided wound documentation system are a chronological and formal documentation of the wound condition. Only continuous monitoring of the wound condition allows the assessment of treatment success. A wound documentation system is the central communication point of all involved parties.

Results: The research project Qutis 3D uses a completely new and intuitive access to all necessary data on the basis of a three-dimensional virtual patient.

Information about wounds, dressings, diagnostic findings (blue pin in fig. 1) and arbitrary documents, as well as a comprehensive picture archive (red pin in fig. 1) can be placed and recalled via pins on the virtual patient.

Digital pictures acquire the wound in two dimensions and can be projected to the three-dimensional model semi-automatically. Consequently, Qutis 3D is able to store the chronological wound development in three dimensions.

Conclusion: Plenty of systems on the market offer parts of these requirements. Most systems are designed to document the chronological treatment per patient. In contrast, Qutis 3D aims to create scientifically comparable data. Thus, it can create a basis for scientific studies and for a world-wide expert system.

Wound Assessment

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IMMUNOHISTOCHEMICAL ANALYSIS OF VESSEL ALTERATIONS IN CHRONIC WOUNDS UNDER TOPICAL NEGATIVE PRESSURE (TNP)*-THERAPY

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Aim: The aim of this study is to demonstrate the effect of TNP* on altering vessel density in chronic wounds. In order to depict the decrease and increase in vessel density, samples of human tissue were biopsied. A correlation between the number of vessels and both the intensity of hypoxia and the intensity of the inflammation are examined.

Method: The study includes 16 patients, excluded from the study are people with an age younger than 18 and people with severe wounds (<5 weeks). The samples of tissue were biopsied at the wound margins and the wound bed. The exact date of TNP*-changing (or the end of the therapy) was dependent on the clinical course of the wound and, according to this, varying. The samples are colored by use of immunohistochemical techniques in accordance with H&E (Haematoxylin and Eosin), CD31 and CD34 (Endothelial Cell Markers), HIF-1 α (Hypoxia-inducible factor) and analyzed with the aid of pictures taken by an optical microscope.

Results: When analyzing the biopsied tissue, an increase in hypoxic cells or a vessel proliferation at the wound margins and in the wound bed was observed until 7 days after the beginning of the treatment. After the seventh day of treatment, there was a decrease in hypoxic cells. The vessel proliferation increased almost linear and was at its maximum with a value approx. 250% higher than the starting value. The inflammation was also most severe until the seventh day of treatment, with the wound bed being affected more intensely.

Conclusion: Based on the result of the coloring of the endothelium we conclude that an increase in vessel density develops until the seventh day. The vessel density positively correlates with the intensity of the inflammation and the increase of the hypoxia. According to this, the hypoxia and the inflammation are of great importance in vessel proliferation and with this, in wound healing.

*Vacuum Assisted Closure-Therapy (VAC)

Wound Assessment

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DIAGNOSTIC-THERAPEUTIC PROTOCOL FOR NEOPLASTIC ULCERS

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Aim: We realized a diagnostic-therapeutic protocol for the neoplastic ulcers

Methods: The diagnostic protocol is divided in three steps:
1. skin biopsy of “resistant” ulcers, which represented the 9,6% of 3063 lesions treated from 2000 up to now.
2. Color duplex scan at groin lymph nodes for morphological and hemodynamic in the neoplastic cases.
3. RMN total-body in pathologic lymph nodes cases.

The therapeutic protocol included:
1. Surgical exeresis of the lesion remaining at almost 2 cm from the edge and arriving until the muscle fascia.
2. Homologous skin graft with crio-conserved de-epidermized derma and covered with thin glycerolized skin.
3. Biopsy of control was performed before the healing.
4. Chemotherapy in methastic cases.

Results: the incidence of neoplastic ulcers is about 1,7% of our “resistant” ulcers. In all cases color duplex scan demonstrated normal lymph nodes morphologic and hemodynamic values, so no RMN total body and no chemotherapy was performed.

We treated 4 of the 5 lesion with this protocol. In 50% of the cases homologous skin was vascularized working like “scaffold,” and reducing lesion thickness and treatment time too. In the other cases we performed another homologous skin graft. No host reaction was recorded and in all cases the control biopsy was negative.

All cases healed and no recurrence appeared in a follow-up until to 9 years.

Conclusions: Our protocol demonstrated to avoid more expensive exams. Homologous skin graft produced good results reducing post-surgical pain, time of treatment and costs.

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REPRODUCIBILITY OF WOUND AREA MEASUREMENT WITH LASER GUIDED PHOTOGRAPHY

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In an earlier diagnostic study we compared 3 sheet methods (counting blocks, digitizer and planigraphy) and planigraphy of photo's to measure the wound area (cm^2). Parameters for agreement, reliability and clinical practicality were calculated. The sheet methods showed appropriate values for agreement and reliability, but not for clinical practicality; where as the traditional photography of wound plus calibration ruler showed good reliability and clinical practicality but large in-agreement.

High agreement means precise measurement, is expressed in the same unit as the measurement tool (cm^2) with the parameters Standard Error of measurement (SEM) and Minimal Detectable Change (MDC). High agreement is a prerequisite for evaluation and prediction of treatment effects. If wound professionals apply measurement to evaluate if the treatment plan is effective, precise measurement is necessary.

Newer photography methods apply photography with laser-guided distance and surface determination. Our research question was: Does this new method combine high methodological quality with good clinical practicality?

We tested 13 different skin wounds from 0,5 to 18,9 cm^2 with 2 observers (test – retest design) and applied 3 measurement tools: sheet planigraphy (gold standard for agreement), traditional photography (gold standard for clinical practicality) and the new laser-guided photography.

The results show that the new laser-guided photography combines the two desired qualities. It is easy and quick to handle, performs bedside clinical information with the highest precision. The last column in the table shows that the new tool has the lowest MDC, so clinical change can be measured adequately.

Method / observer	Variance per wound	Error variance	SEM	MDC
Intra observer agreement:				
Sheets, observer 1	21,389	0,43	0,655	1,81 cm^2
Sheets, observer 2	21,830	0,16	0,400	1,10 cm^2
Traditional Photo, obs.1	51,924	4,153	2,037	5,64 cm^2
Traditional Photo, obs.2	37,863	3,667	1,914	5,30 cm^2
Laser-guided Photo, obs.1	20,214	0,094	0,306	0,84 cm^2
Laser-guided Photo, obs.1	25,839	0,082	0,286	0,79 cm^2
Inter observer agreement:				
Sheets, observers 1/2	20,637	0,911	0,954	2,64 cm^2
Traditional Photo, obs. 1/2	53,184	4,647	2,155	5,97 cm^2
Laser-guided Photo, obs. 1/2	22,201	0,466	0,682	1,89 cm^2

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THE INTOLERABLE COST OF WOUNDS: THE VALUE OF HEALTH ECONOMICS IN WOUND MANAGEMENT

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Aim: The human and economic cost of wounds is substantial, but poorly understood. The aim is to highlight the true costs and to demonstrate how health economics can be used to show the value of wound prevention and healing.

Methods: Original research and review of international literature

Results: Most patients with a wound are treated by community nurses, and providing wound care is the single most important use of community nurse resources – anything from 50% to 70% of patient contact time. Between 25% and 50% of acute hospital beds are occupied by a patient with a wound, many of which are hospital acquired. Surgical wound infection is estimated to affect between 30-40 patients per 1000 operations, and its effects can be life-threatening. The excess cost to a typical hospital in Europe is around €2m annually. Surveys of European hospitals show that one in five inpatients has a pressure ulcer, 50%-80% of which are hospital-acquired. Pressure ulceration is painful and debilitating, and can be extremely expensive to treat: one grade 4 ulcer can cost more than €100,000. Good wound care is critically important because any wound is at risk of complications which inhibit healing and compromise patient safety. And yet, wound care rarely receives the share of resources or senior management time which its importance justfiies.

Conclusions: Excellence in wound care offers a means to reconcile the inevitable tensions between clinical and financial imperatives. Good wound care not only improves outcomes for patients, it also reduces costs to the healthcare system.

Key session: The value of health economics in wound care

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THE COST OF TREATMENT AND SUCCESSFUL INNOVATION PROJECTS

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The costs of treating chronic ulcers have shown to be high both from a societal perspective and from the perspective of the health care providers. During recent years positive examples have illustrated the possibilities to reduce both resource utilisation and costs with simultaneously important improvements in health related quality of life for affected patients. Successful projects are often associated with a broader perspective including not only the costs of dressings and other material but also costs of staff, frequency of dressing changes, total time to healing, and quality of life. Several cases have focused on education of physicians and nurses together with more effective management of ulcers as fruitful actions. These examples include a correct ulcer diagnosis as a prerequisite for an accurate and successful care, the use of more effective dressings and other wound care material, choice of dressings suitable to type of ulcer and diagnosis, measures to improve healing and avoid recurrent ulcers, and shortening of total time to healing.

Many health-economic cost-effectiveness studies of interventions in wound care have evaluated specific types of dressings. These studies are important tools for health-economic assessments of different management strategies, especially as comparisons with existing standard treatment when a new treatment alternative should be introduced. It is less common to study and evaluate organisation of wound care or management systems but these studies can provide important and useful information to improve the outcome of wound care. It is also important to be aware of costs associated with non-optimal management of ulcers.

Key session: The value of health economics in wound care

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HEALTH ECONOMICS IN WOUND MANAGEMENT A CLINICAL PERPECTIVE

Jan Apelqvist[1].

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While it is important to identify interventions and stratergies early to avoid complications and facilitate healing,especially in hard to heal ulcers, these often have cost implications. Clinicians need to be able to present robust economic arguments to fund holders.
A major problem in the analysis of the cost of disease states is the wide variation in the the cost criteria used by studies. Difficulties in comparing cost analyses are compounded by variations in care protocols and the economic status of different countries, eg variations in rates of pay to healthcare staff. Significant efforts will be required to identify a series of standardised criteria for cost analyses that can be used to further identify the most economically effective ways to treat hard-to-heal wounds and to aid useful comparisons between different care protocols and healthcare systems. A number of reports have indicated the cost-effectiveness of different new technologies and dressings used for the treatment of hard to heal wounds. Although many of these products are more expensive than the compared treatment, the use of them may be cost- effective if they result in less frequent dressing changes and/or if they result in more effective or faster healing It is important to be aware that a treatment could be cost-effective in one group of patients or for one type of wound but not in another type. An intervention could also be cost-effective when used in one setting or country but not in another. When looking at the economic cost and assessing use of resources, it is important not to focus on individual items such as dressings or procedures but to adopt a broader view of total resource use.

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PRESSURE ULCERS – EPIDEMIOLOGY AND IMPACT

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Pressure ulcers are not a modern phenomenon; they have been known to exist since ancient Egyptian times and probably since man has been on earth. It is interesting that despite widespread education and training in this area, and the huge investment in both human and financial resources, pressure ulcers remain a significant health problem today. Changing demographics and the predicted rise in the number of older persons, suggests that the number of pressure ulcers is set to rise correspondingly, unless effective pressure ulcer prevention measures are put into place. Having an understanding of the epidemiology and impact of pressure ulcers can contribute to the development of targeted prevention strategies for the following reasons:

- Knowing that pressure ulcers are a problem may raises the awareness of their significance
- Understanding the impact that pressure ulcers have on the individual may foster a change in attitudes and subsequent behaviours in pressure ulcer prevention
- Appreciating the financial impact of pressure ulcers may facilitate a more critical questioning of the measures used for both prevention and management
- Appreciating pressure ulcer prevalence and incidence figures identifies areas with greater or lesser problems, thereby facilitating the targeting of resources appropriately

This paper will provide an overview of the epidemiology and impact of pressure ulcers on health and social gain. It is hoped that understanding these aspects of pressure ulcers will place into context the importance of this health care problem. Further, the paper will raise the awareness of the need to invest in implementation and evaluation of existing guidelines.

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GUIDELINES FOR PRESSURE ULCER PREVENTION AND MANAGEMENT

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The International Pressure Prevention and Treatment Guidelines were published last year after a long journey lasting a little over 4 years and involving a great deal of hard work from a great many individuals on both sides of the Atlantic. The methods used for the underpinning literature review and development of the guideline statements has already been presented at a EWMA Conference and will only be touched on briefly in this presentation.

The layout and content of the guidelines will be described with examples given of guideline statements and some of the supporting evidence. Some of the controversies will be discussed and the issues of producing statements that will be relevant to health care professionals across the world. One good example is support systems which may be readily available in some countries and not in others.

The guideline is available as both a Clinical Practice Guideline and as a Quick Reference Guide. Details on how to obtain copies of the Guidelines will be given.The guidelines are being translated into a great many different languages and some translations are already on the website. Information about current translations and how to undertake a translation will be provided.

On behalf of the EPUAP/NPUAP Guideline Development Group

Key session: Pressure ulcer guidelines

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IMPLEMENTING GUIDELINES IN PRACTICE – REPORT ON EXPERIENCES IN GERMANY

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The German Network for Quality Development in Nursing („Deutsches Netzwerk für Qualitätsentwicklung in der Pflege“, DNQP) develops “expert standards“. These standards are mono-professional instruments for quality development in nursing. In 2004, an expert standard on pressure ulcer prevention in nursing was published describing a professionally balanced performance level with criteria assessing structure, processes, results and result checking. This development of standards is based on a strictly regulated methodology (systematic literature review, derivation of treatment recommendations, consensus conference, and implementation phase in specific facilities). The expert standard later on consists of a preamble, the standard itself, comments on the specific levels and criteria, a literature review, a glossary, enclosures, audit instruments and the results of the implementation. These expert standards are directed at all departments of quality management, there are no recommendations regarding their implementation.

Expert standards are legally regarded as “anticipated expert opinions” and the 2008 act on further developments in nursing (Pflegeweiterentwicklungsgesetz) requires them to be explicitly implemented. That is why their implementation is monitored in individual facilities within the framework of a quality assessment scheme.

Unfortunately, there is no reliable data on the degree of implementation. In hospitals, the expert standard can be considered widely implemented. Many geriatric care and homecare facilities are currently implementing the standard or are planning to do so. The majority of respondents think of the standard as a very helpful instrument. However, concerning pressure ulcer risk scales, risk factors, replacement techniques, therapeutic appliances, nutrition and skin care, gaps in knowledge and a need for further education was observed.

The greatest challenge is the implementation of individualized nursing individually assessing the frequency of risk assessment or the frequency of replacements for each patient.

Key session: Pressure ulcer guidelines

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MAKING THE CASE FOR PRESSURE ULCER PREVENTION USING HEALTH ECONOMICS

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IMPACT OF AGEING ON THE SKIN

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NFLUENCE OF UNDERLYING DISEASES ON WOUND MANAGEMENT OF THE ELDERLY

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The most common non-healing wounds are: pressure ulcers, diabetic foot ulcers, venous and arterial leg ulcers and malignant wounds. Many of these wounds develop among the elderly, becoming non-healing to the extent that the patient may live with them all of his life, or even die because of them. Not enough attention is done to the underlying, contributing problems specific to the elderly patient. Those factors are physiologic (aging skin, immune state, atherosclrosis…) and/or pathologic situations (diabetes, ischemia, malnutrition, cognitive disorders, chronic inflammation, incontinence…). Therefore, a geriatric approach is complete and multidisciplinary. Those including: precise diagnose and management of patient's comorbidities, functional status (measured by appropriate scales), nutritional status (evaluation and appropriate management), social support, ethical beliefs and quality of life and not only the wound itself. Each care giver (nurse, physician, pain specialist, dietician, social worker, occupational and physiotherapist) has its own task in preventing and treat such wounds. The ultimate goal therefore has been altered from healing of the wounds to symptom control, prevention of complications and to contribute to the patient's overall wellbeing. This lecture review all those items in a geriatric point of view, and explain how to deal with this different type wounds including malignant ones or ischemic, sometimes in a palliative way.

Key session: Wound care in senior adults

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ERYSIPELAS: A RE-EMERGING DISEASE IN SOME WESTERN COUNTRIES

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Aim: To present our experience in erysipelas (E.).

Methods: In the last 12 years, we have had the opportunity to follow several patients with E.

Results: In Italy, E. is more frequent than in the past. It occurs especially in females with >65 years of age.

Local predisposing factors are venous insufficiency, tinea pedis and lymphedema. Group A Streptococcus β hemolyticus is the etiological agent in 40-65% of cases. E. caused by Staphylococcus aureus is much more frequent than in the past (15-25% of all cases).

Early clinical picture is characterized by asthenia, chills and fever. Skin features are characterized by a single erythematous-edematous lesion, red in colour, accompanied by pain. Legs and thighs are involved in 85% of patients, the face in 15%. E. on the upper limbs is now more frequent than in the past.

Laboratory abnormalities include leukocytosis with neutrophilia and increased ESR, C-reactive protein and α-1 acid glycoprotein.

Systemic complications (glomerulonephritis, endocarditis and sepsis) are rare. Local complications (lymphedema, abscess and gangrene) are common. Death is rare. Recurrences are very frequent (20-35% of patients).

Penicillin G is the treatment of choise. Non-steroidal anti-inflammatory drugs must be avoided. The use of heparins is unnecessary.

The antibiotic of choice for prophylaxis is penicillin benzatin.

Conclusions: E. is more frequent than in the past. Objective of the therapy is to control the acute phase of the disease and to avoid the development of chronic lymphedema, in which skin ulcers represent a common complications.

Key session: Wound care in senior adults

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A HOLISTIC APPROACH TO SKIN INTEGRITY IN THE ELDERLY

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The skin is acknowledged to be the body's largest organ and the term 'skin integrity' is about whether or not a patient's skin is intact. There are a range of important factors in the elderly that influence skin integrity and make it likely that this may be impaired. One of the most widely described examples of this is the development of pressure ulcers in the immobile, particularly in hospital settings. There are, however, other conditions to which the elderly are prone, that predispose to problems of skin integrity and many of these overlap with other clinical specialisms, particularly dermatology. Problems of urinary and/or faecal incontinence are likely to cause irritant contact dermatitis. Lower limb venous disease can lead to varicose eczema and venous ulceration. Specific inflammatory skin diseases such as erythroderma due to widespread psoriasis, bullous pemphigoid or severe widespread drug eruptions such as toxic epidermal necrolysis are associated with altered skin integrity and present specific challenges in the elderly. Other medical problems such as peripheral vascular disease and diabetes mellitus are common causes of non-healing chronic wounds. A holistic approach to care requires consideration of physical, social and psychological factors and good clinical practice emphasises this approach. In the context of the elderly, the broad range of conditions that may predispose to altered skin integrity makes the need to work across specialisms, including particularly dermatology, essential in order to provide the highest quality holistic care for this group of vulnerable patients.

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THE FIRST 40 YEARS: WHAT'S NEXT

Thomas K Hunt[1].

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As one of the "elders" who was alive even before wound healing went on the fast track, let me put some perspective on the last 40 years.

Growth factors, were the start not because they were that effective but because they brought interest, money and research into a long neglected field. But what did we find? We found the importance of moisture, surgical debridement, perfusion/ oxygenation, pain control and warmth, the principles of managing acute wounds as well. I predict that our greatest progress will, for a while yet, come along the same lines despite the sexier growth factors and stem cells. However, the pharmacology of healing is building with statins and vasodilators. The era of inflammation research has begun, and I have some suggestions.

Particularly though, I must emphasize the importance of organization. From a loose group of nursing and medical practitioners have come the Stomal Care groups, the Wound Management Societies, etc. perhaps soon the Intergalactic Wound Society. We have mutually agreed on the first tentative standards of care. We should go another step in that direction and form wound data collection cooperatives to refine the severity indices, find the strongest predictive data, establish norms for results of treatment, find the unresponding outliers so that substandard practices can be found, and improved, so that futile and expensive methods can be eliminated, and, perhaps even keep litigators of our backs for our many failures, especially for the inevitable pressure ulcers we face in dying patients. These are daunting tasks, but there are precedents.

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CANCELLED

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A SOCIAL MODEL FOR LOWER LIMB CARE*

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A social model for lower limb care.

One model for the delivery of lower leg care creates local social networks of people with active or healed leg ulcers receiving care in non health care settings albeit with professional nursing staff in attendance and following rigorous clinical protocols and firm audit pathways. Within this model all members take part in regular audit of the progress of their leg ulcer and/or their healthy legs.

The aim of this presentation is to report upon the experience of 4282 leg club members who attended one of nineteen leg clubs between 2006 and 2009. The 4282 members made 29285 documented visits to their leg clubs. Only 28.1% (n=1205) attended primarily for treatment of a leg ulcer with 1166 presenting for advice on leg ulcer prevention. Other reasons for attending a leg club included management of skin tears (n=92) and lower leg pain (n=144). Over 25% (n=1146, 26.7%) attended a leg club as a self-referral with 862 and 806 referred by a District Nurse or General Practitioner respectively. Almost 300 members (n=281) attended on the advice of family or friends.

For those with a leg ulcer, 867 were reported to have healed wounds following participation in their leg club (71.9%) while of these 140 had recurrent leg ulcers (16.1%). The consistent audit of leg club members over time suggests the value of this care model with over 70% healed and relatively few recurrent leg ulcers.

*The Lindsay Leg Club Model

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IMMUNOISTOCHEMICAL EVALUATION OF VENOUS LEG ULCERS BEFORE AND AFTER NEGATIVE PRESSURE THERAPY

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Introduction: The therapy of venous leg ulcers represents a medical challenge. Whenever possible, therapy should be causal, including compression and surgery. Negative pressure therapy has been successfully used in several phases of the treatment of venous leg ulcers.

The aim of our study was to evaluate by immunoistochemical markers the efficacy of negative pressure therapy in the treatment of hard to heal venous leg ulcers.

Materials and Methods: We included 30 patients with hard to heal venous leg ulcers. The patients was divided in two groups; one group treated with negative pressure therapy, polyurethane foam and short stretch bandage and the second one with moist wound dressing and short stretch bandage. We monitored the patients before and after one week of treatment by multiple biopsies. The immunoistochemical evaluation included markers for angiogenesis (CD31), lymphatic vessels (D240), macrophages (CD68), lymphocytes (CD3).

Results: All patients included in the negative pressure group, after one week, showed a significantly improvement in terms of angiogenesis, lymphatic vessels, macrophages and lymphocytes proliferation compared to the control group. The markers CD31 and CD68 showed a significant increase in the reticular dermis. CD3 marker was significantly present in the full dermal compartment.

Conclusions: Our study demonstrated in a objective way, by immunoistochemical findings, the efficacy of negative pressure therapy in hard to heal venous leg ulcers. In particular we showed the fast granulation tissue and neoangiogenesis promotion. In our opinion the negative pressure therapy has to be included, as adjuvant, in the venous leg ulcer therapy.

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CLINICAL INVESTIGATION ON NEW RELEVANT COFACTORS IN THE PATHOGENESIS OF PYODERMA GANGRENOSUM

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Pyoderma gangrenosum is a very rare ulcerating dermatosis of undetermined origin. The onset of these ulcerations is often reported after traumata like insect bites, excoriations or surgical intervention. An association with diseases like chronic inflammatory gastro-intestinal diseases or different immune mediated diseases shall accumulate in these patients. The aim of our retrospective monocentric investigation was to objectify the determined diagnostic parameters as well as the potential associated diseases and other cofactors in patients with pyoderma gangrenosum.

Altogether the data of 37 patients suffering from a pyoderma gangrenosum could be evaluated. The average age was 57 years, 64.8% of the patients were female. The pain was 7 in average on the visual analogue scale. The co-incidence for a colitis ulcerativa was only 5.6% and for an existing Crohn's disease 2.8%, but 13.8% for neoplasia. We could objectify obesity in 36.1%, in 27% a chronic nicotine abuse, and respectively in 22.2% a diabetes mellitus or a peripheral arterial occlusive disease as further potentially associated cofactors. In view of the serological parameter we evaluated pathological elevated values in 72% for the C-reactive protein, in 61% for leukocytes and in 33% for the creatinine.

Even if there is no conclusion considered as applicable in general after evaluating this first clinical data. But the association of cofactors in patients having a pyoderma gangrenosum were not described so far and will be evaluated from our group in a continuative multicentric study.

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WHY PATIENTS DO NOT ADHERE TO THE USE OF COMPRESSION STOCKINGS? DIFFERENCES BETWEEN NURSES' AND PATIENTS' PERCEPTIONS

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Aim: Compression therapy in a corner stone of venous ulcer management and an ongoing need even after wound healing. Thus the use of compression stockings is indicated to a significant number of patients, namely to avoid recurrent ulceration. However not every patient having clinical indication to compression therapy comply with it even if stockings seam to be easier to use than bandaging systems. Moreover it is necessary that health professionals and patients discuss difficulties found and negotiate adherence to compression. As in our country compression therapy is managed by nurses the aim of this study was to know if nurses acknowledged patients' difficulties and what were those difficulties.

Methods: A case study involving 30 patients and their 9 nurses was designed encompassing specific pre-tested questionnaires in order to answer the question: what are the main factors influencing patient's adherence to the use of compression stockings.

Results: Seven reasons were pointed out by nurses and patients: discomfort, strong pressure sensation, difficult to wear, heat, pain, aesthetic reasons and wound deterioration. However theses reasons are differently valued by patients and nurses: as an example of that the main reason pointed by nurses is pain and strong pressure in lower limb while for patient's the main reason is that stockings are difficult to put on. Significant differences were also found regarding pain and wound deterioration.

Conclusion: Further research is needed however this results point out that nurses must be more aware of what patients feel in order to improve patients' adherence to compression.

Leg Ulcer 3

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SKIN SYMPTOMS AROUND NON- HEALING VENOUS WOUNDS

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Aim: To demonstrate the pathogenesis of the different complications including lymphorrhoea, maceration, dermatitis, pyodermie, cellulitis, atrophie blanche developing around the non-healing wounds in patients with chronic venous insuffuciency (CVI). Maceration is a largely under-recognized problem and one of the causes of delayed wound healing.Wound exudate is an influential factor in healing.The adequate skin care is discussed as well.

Methods: 75 CVI ulcers were examined with transcutaneous oxygen partial pressure measurement, TcpO2 and laser Doppler flowmetry. On the analog scale the patients did complain constant pain can originate from pitting phlebo-lymphoedema, lipodermatosclerosis, infection, or atrophie blanche. Excessive wound exudate can cause skin maceration around the wound, which may delay healing and lead to other complications. The amount of wound fluid is an indicator of an increasing bacterial load and the presence of infection. Wound fluid for bacterial culture was taken from every patients.

Results: Skin maceration was severe in cases of polymicrobial infection (75/21, Staphylococcus aureus E.coli, Pseudomonas aeruginosa) escorted by large amound of wound fluid and cellulitis. Atrophie blanche in association with venous insufficiency was present 75/15 cases. Parallel to the reduced capillary number in atrophie blanche the skin tcPO2 decreased, and increased laser Doppler flux reflecting elevated subcutaneous flow, and diminished vascular reserve were observed. The only laboratory abnormality was an elevated fibrinogen level (between 430-472 mg/dL).

Discussion: Human skin is constantly exposed to environmental factors. It functions as a physical barrier and also has the capacity to generate adaptative immune responses, to protect the host from microbial and chemical agents. Water is absolutely essential for the normal functioning of the skin and especially its outer layer, the stratum corneum (SC). Water lost due to maceration and corneodesmolysis that mediates exfoliation, are often disturbed upon environmental challenge, resulting in dry, flaky skin conditions. Patients with non-healing wound have a damaged epidermal barrier. This is the reason of the development of dermatitis, eczema, cellulitis of the impaired macerated skin around the wounds.

Clinically effective therapeutic measures improve the impaired microcirculation of the skin at the ulcer rim and at atrophie blanche spots. Patients with painful ulcers were treated with dapsone (50 mg p.o. and pentoxifylline (400 mg p.o.).

Leg Ulcer 3

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IMPACT OF STANDARDIZED TREATMENT IN A HEALING CENTER ON THE HEALING TIME OF VENOUS ULCERS

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1) In a population of patients that are consecutively afflicted with venous ulcers treated at the healing center (HC) of the Pasteur Clinic in Toulouse, 102 healed patients were selected.

2) Everyone benefitted from a standardized treatment including a vascular exam, local treatment by a specialized nurse, and a compression. The patients were treated at the HC and by their private team. The purpose of this work was to assess the impact of this treatment structured on healing time.

3) On 102 patients, including: 66 women, age: 74 years old ± 14.6, age of wound: 14.14 months ± 32.8, average surface: 24.9 ± 46 cm^2, average healing time (AHT): 3.09 months ± 3.3. There is a significant difference between the AHT after treatment at the HC in relation to the duration of evolution before arriving at the HC ($p < 0.001$). There is a correlation between the AHT and the treatment year ($p = 0.03$), and sex ($p = 0.34$). There was no correlation between the AHT as of treatment at the HC and the existence of chronic vein failure, post-thrombotic disease and the area.

4) This work confirms the reduction of the AHT when a patient is treated in a specialized HC in strict collaboration with the private healthcare providers with an AHT of 3 months, similar to the data from the literature.

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LOCAL THERAPY USING WOUND DRESSING WITH IONIC SILVER AND ALGINATE HELPS IN HEALING OF DIABETIC FOOT ULCERS

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Aim: We evaluated retrospectively effectiveness of local therapy using the wound dressing with ionic silver and alginate in patients with diabetic foot ulcers.

Methods: 63 patients (4 Type 1 diabetic patients, 16 women, mean age 59.7±10.6 year, mean duration of diabetes 13.2±8.5 years) were treated with two-layer wound dressing with alginate and ionic silver. We assessed the change of ulcer area, the mean treatment period was 151.5 days (time to the healing, to the treatment switch, or 180 days maximum).

Results: The diabetic foot ulcers were in 57.1% of neuroischemic and in 42.9% of neuropathic etiology. According to the Wagner-Meggitt classification 17.5% ulcers were of grade 1, 73% ulcers grade 2 and 9.5% ulcers grade 3. Median of the ulcer area was 4.9 cm^2. Clinically manifested infection (erythema, phlegmon, malodorous exudate) was present in 55.5%, a positive swab in the case of wound healing stagnation was found in 28.6%. We observed statistically significant mean reduction in ulcer area (68 ± 54%), with a median of 91.7% ($p < 0.001$) at the end of treatment. In 14 patients ulcers healed completely. We have seen no significant difference in healing between ulcers of neuroischemic and neuropathic etiology.

Conclusions: The use of modern wound dressing with alginate and ionic silver significantly helps to the ulcer healing in patients with diabetic foot syndrome. The advantage of these materials is an antimicrobial effect, extended time between re-dressings and good tolerability.

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COMPARATIVE CLINICAL STUDY TO DETERMINE THE EFFECTS OF COLLAGEN/ ORC+SILVER THERAPY ON WOUND HEALING OF DIABETIC FOOT ULCERS

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Collagen/ORC+silver has a combined mode of action in controlling bioburden and modifying the wound microenvironment to promote healing.

Aim: To determine the effects of collagen/ORC+silver therapy on wound size reduction of diabetic foot ulcers and to compare results with control values.

Method: 39 patients were recruited for the study; 24 were treated with collagen/ ORC+silver and 15 control patients were treated according to a standard treatment protocol. The wound area was measured weekly over a maximum of fourteen weeks and the outcome was determined by percentage reduction in wound area.

Results: Each week throughout the 14-week study period, there were a higher proportion of healed and improved (>50% reduction in area) wounds in the collagen/ ORC+silver group than the control.

52% of wounds treated with collagen/ORC+silver healed within the 14-week study period, compared to 31% of healed wounds in the control group.

There were no withdrawals due to infection in the Collagen/ORC+silver treatment group, in contrast to this, 33% of the control group were forced to drop out of the study due to wound infection.

Conclusion: In this study treatment of diabetic foot ulcers with collagen/ORC+silver led to increased rates of healing and decreased incidence of infection.

This study has shown that the multifactoral approach to wound healing leads to improved clinical outcomes by reducing risk of infection and promoting wound healing.

Diabetic Foot 2

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APPLICATION OF GENTAMICIN- COLLAGEN SPONGE SHORTENED WOUND HEALING AFTER MINOR AMPUTATIONS IN DIABETIC PATIENTS

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Background: A minor limb amputation in diabetic patient is a procedure with high risk of insufficient wound healing and reamputation. Wound healing is difficult especially when preoperative osteomyelitis is present. Surgical intervention is useful to remove infected tissues and enhance healing of the ulceration but infection remains the problem. Gentamicin collagen can be used as local prevention of postoperative residual infection.

Aims: Aim of this randomized study was to assess influence of gentamicin- collagen sponge on wound healing and reamputation rate after minor amputation in diabetic patients.

Methods: Fifty diabetic patients indicated for minor amputation at our hospital in year 2009 were randomised into two equal groups. Patients in group A were treated with a gentamicin collagen sponge and patients in group B were not. After the procedure, all patients were treated adequately at our podiatric clinic. Healed wounds were considered as at least one month without skin breakdown.

Results: There was no significant difference in demographic data, laboratory values, diabetes duration and peripheral vascular disease severity between the groups. Six (30%) re-amputations in group A and eight (40%) in group B were necessary, with no statistical difference between the groups. Median of the wound healing duration was significantly shortened ($p<0,05$) by the use of gentamicin- collagen sponge in group A (21 days, range 12-120 days) when compared to the group B with no treatment (34 days, range 18-140 days).

Conclusion: Application of gentamicin- collagen sponge shortened wound healing duration after minor amputations in diabetic patients.

Diabetic Foot 2

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THE VALUE OF THE NERVE DECOMPRESSION IN DIABETIC NEUROPATHY FOR THE PREVENTION OF FOOT ULCERS. A META ANALYSIS OF THE ACTUAL LITERATURE AND REPORT OF CLINICAL EXPERIENCE

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The typical triad of a diabetic foot includes the chronic wound, frequent as a plantar ulcer, the bone deformity, and sensibility impairment. The pathogenesis of neuropathy is mainly based on the diabetic nerve swelling and following compression, demonstrated by animal models in diabetic rats and seen in human nerve sections.

Recent investigation showed, that the treatment of the neuropathy by opening the key compression point, mainly the tarsal tunnel, lead to a significant recovering of the sensibility and an improvement of ulcer healing. The opening of the tarsal tunnel has to include the three nerve branches of the posterior tibial nerve: the calcareous branch, the medial and to the lateral plantar nerve. Depending of the symptoms the deep peroneal nerve on the dorsum of the foot, the superficial peroneal nerve of the lower leg and the common peroneal nerve at the side of the fibula head can be included in the release.

Starting in 2003 but mainly from 2006 on more than 10 prospective trials was published. The meta analyses indicates that the rate of post op foot ulcers is close to zero and in all studies no amputations occurred in the post op follow up, combined with a low operation risk. The author’s experience is supporting the published data.

In consequence of these data it can be considered, that even in early stages of beginning neuropathy a nerve release can be indicated as an effective prophylactic procedure to prevent further diabetic foot damage including the prevention of foot ulcers.

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USAGE OF DIFFERENT LOCAL THERAPEUTICS IN PATIENTS WITH MRSA AND NON-MRSA INFECTED DIABETIC FOOT ULCERS

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The aim of our study was to compare outcomes of DFU treatment related to the usage of antiseptic solutions or mixed local therapy in MRSA and non-MRSA infected DFU.

Methods: 163 patients with infected DFU were included into the retrospective study-31 patients (19%) were MRSA+ (MRSA group), 132 patients (81%) were MRSA negative (non-MRSA group). During the observed period (1 year) were these patients treated by antiseptic solutions or mixed local therapy. Outcomes of DFU treatment evaluating during 1year period were classified as successful (DFU improvement or healing) and unsuccessful (progression of DFU, amputation, death) and were compared between MRSA and non-MRSA group with relationship to the type of local therapy.

Results: Significantly lower percentage of MRSA+ patients was successfully healed compared to patients with non-MRSA DFU (13.3%vs.32.8%;$p<0.05$), however the healing time of DFU did not differ significantly between the study groups (3.7±0.9vs.7±3.7 months;NS). As the usage of different local therapeutics as the application of different local therapeutics/1 patients/1 year did not differ significantly between the study groups. The effect of antiseptic solutions on the outcomes of DFU therapy did not differ significantly from the effect of mixed local therapy both in MRSA and non-MRSA group.

Conclusions: Our study showed that the success of DFU treatment as in patients with MRSA as in patients with non-MRSA infected DFU was not significantly influenced by the usage of local agents.

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NUTRITIONAL TREATMENT FOR DIABETIC FOOT ULCERS: A RETROSPECTIVE STUDY

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Aim: A combination of arginine, glutamine and beta-hydroxy-beta-methylbutyrate (Arg-Glu-HMB)* appeared to improve healing of diabetic foot ulcers. Therefore, this treatment was explored in a retrospective study of subjects with neuropathic diabetic foot ulcers.

Methods: Of 38 consecutive subjects reviewed, 12 with recurrent ulcers who had not been treated previously with the combination were given Arg-Glu-HMB from wound presentation to time to total re-epithelialization without discharge.

Previous Ulcer Treated without Arg-Glu-HMB				New or Recurrent Ulcer Treated with Arg-Glu-HMB		
HbA1c (%)	Location	Duration (days)	Outcome	HbA1c (%)	Location	Duration (days)
9.7	1st toe	150	Surgery	10	2-3 toe	90
10	Ankle	700	Partially healed	9.8	Ankle	68
11	Forefoot	650	Surgery	10.2	Heel	60
9	Forefoot	180	Partially healed	11	Forefoot	90
9	Forefoot	210	Partially healed	9.9	Forefoot	90
7.7	Forefoot	120	Healed	8.1	Forefoot	60
9.9	Forefoot	240	Healed	8.8	Forefoot	40
9	Forefoot	120	Partially healed	8.7	Forefoot	90
9	Forefoot	120	Healed	9.1	Forefoot	68
11	1st toe	152	Healed	10.6	1-2nd toe	90
11	Forefoot	180	Surgery	11.9	Heel	60
9.4	5th toe	90	Partially healed	8.9	5th toe	56

Results: Prior to Arg-Glu-HMB, 7 subjects had a recurrent or similar ulcer in the same position and 5 had surgery for a previous ulcer and were now being treated for a similar ulcer in a different position. HbA1c was not significantly different (p=.6709) between the two time periods. Ulcer duration time was significantly less following Arg-Glu-HMB treatment ($p<.0001$).

Conclusions: This pilot trial provides data suggesting that patients with diabetic foot ulcers may benefit from a supplement containing Arg-Glu-HMB.

*(Abound™, Abbott Nutrition)

Quality of Life

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WHAT IS THE ROLE OF THE COMMUNITY PRACTITIONER IN PROMOTING QUALITY OF LIFE IN PATIENTS WITH LEG ULCERS?

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Aim: This paper aims to identify findings from research studies on QoL in patients with leg ulcers and guidelines which can inform community practitioners' activities in the promotion of the QoL for patients with leg ulcers.

Method: A review of published research articles focusing on QoL in patients with leg ulcers. All literature was retrieved from electronic databases, Cochrane Database of systematic review, British Nursing Index, CINAHL and MEDLINE. Allied literature was searched due to lack of literature on the role of the community practitioner.

Results: A lack of consensus in the health care field on the definition of QoL and its measurement was found. While, different QoL assessment tools were used in the reviewed studies on patients with leg ulcers none of them were disease focused; yet disease focused QoL assessment tools exist. Current clinical guidelines, policies and procedures do not fully highlight the importance of practitioners' role in assessing QoL in patients with leg ulcers.

Conclusion: In conclusion, the practitioners' role is not fully highlighted, because nursing processes are based on the aspects which should be assessed when assessing QoL. Therefore, the community practitioner has to be innovative and creative in order to enable patients to attain a better QoL. This can be done by an effective use of disease focused assessment tools, regular clinical audits and regular teaching sessions.

Quality of Life

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FACING THE LOOKS OF OTHERS: SEVERE FACIAL BURNS

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This study focuses on the experience lived by people having facial burn sequelae. The scar serves as an analyzer of the relation to the body, as much for the people affected as for the people that see them (through their reactions).

Goal: Medical advancements increasingly allow burned individuals to survive, even if they are practically entirely burned (more than 95% of the body surface).

However, little data exists on the experience lived by severe burn victims facing other individuals. Our study intends to fill this gap.

Theoretical Method: Semi-directed interviews were completed with people presenting visible burn sequelae. To analyze the collected data and bring a new clarification, recognition theories (Honneth) were mobilized.

Results / Conclusion:

Interactional Discomfort
This study permitted to conceptualize the interactional discomfort that arises in the presence of a severe burn. A person departing from the standards of a normal, or even acceptable appearance, sparks contrast reactions ranging from obvious reactions (comments, staring, etc.) to more subtle reactions (moral reserve, etc.).

Struggle for recognition
Severe burns lead a true struggle for recognition.
The struggle "against" the designation of being a subhuman person.
The struggle "for" recognition of their suffering, so that this is given value.

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IMPROVING QUALITY OF LIFE OF BREAST CANCER PATIENTS THROUGH REHABILITATION AND PREVENTION OF LYMPHOEDEMA

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Aim: With a national drive for prevention and early intervention a breast cancer rehabilitation and prevention of lymphoedema scheme was developed. Breast cancer patients have a 25% chance of developing lymphoedema. Patients complained of lack of knowledge/awareness and 60% reported reduced shoulder mobility post-surgery. Touching and massaging scars was not routinely taught leading to scar tightness and anxiety causing quality of life problems. This abstract reports on the first 500 patients results.

Method: Over 1200 patients have been registered on the rehabilitation scheme. Service provision includes session's pre/post operatively, daily physiotherapy until discharged and 6-week rehabilitation exercise/education scheme in a local gym. This includes advice on nutrition, breast reconstruction, complimentary therapy and scar management combined with salsa, aqua-aerobics, circuits or relaxation. Reviews also undertaken at 1/2 years postop. Qualitative/Quantitative data was collected for evaluation including EORTC questionnaires, patient satisfaction surveys, shoulder mobility, lymphoedema incidence and scar improvement.

Results: 100% of patients now aware of lymphoedema and help available, 77% improvement in quality of life, 100% stated information leaflets helpful, 95% full shoulder mobility, 23% diagnosed with cording (treated immediately). 1 year postop 60% of patients had yielding/supple scars, 66% patients fearful about touching their scars and 99% found the scar information helpful. Incidence of lymphoedema reduced from 25% to 12%.

Conclusion: Preventing chronic conditions is vital for the future of NHS. Simple strategies, providing written information leaflets and offering cancer rehabilitation after diagnosis can empower patients to control their own health.

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IMPACT OF DIABETIC FOOT ULCER PAIN ON LIFE QUALITY: THE PATIENT'S PERSPECTIVE

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Aim: Diabetic foot ulcers (DFU) are often considered painless due to sensory peripheral neuropathy, with pain only occurring with infection or other complications (Sibbald et al., 2006). However, recent research suggests DFU pain is more prevalent than expected and severely impacts on quality of life (Ribu et al., 2006; Bengtsson et al., 2007). This study explored the effect of specific DFU pain on life quality from the patient's perspective to gain insight and understanding of this issue.

Methods: A qualitative design using semi-structured interviews was used. Purposive sampling identified three patients from a specialist diabetic foot clinic who were interviewed individually using an interview guide. Interviews were recorded, transcribed and then analysed using thematic content analysis.

Results: Four themes emerged from the data - Experience of Pain; Physical Effects of Pain; Coping, Support and Social Impact; and Psychological Impact. Results indicated DFU pain affected patients physically and psychologically, especially with regards to sleep, mobility and social roles. Feelings of depression, isolation and loss of independence were expressed. Pressure from footwear and dressing changes caused or worsened DFU pain. Oral analgesia was the main form of pain management but with varying efficacy.

Conclusions: DFU pain is an under-recognised phenomenon which can be severe, debilitating and negatively impact on life quality across physical and psychosocial domains. These results demonstrate the need for further qualitative work into the patients' lived experiences of DFU pain to help clinicians understand the relevance to holistic diabetic foot care and to increase provision of quality care.

Quality of Life

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IMPROVEMENT IN THE CARE AND QUALITY OF LIFE OF PEOPLE WITH CHRONIC WOUNDS IN AN CONTEXT OF AN EVIDENCE-BASED QUALIFICATION

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Intention: The care of patients with chronic wounds increases further up to chronic-degenerative illnesses by a changed illness spectrum. At the moment, there is a lot of knowledge of experience within the specific professional groups in case of care of people with chronic wounds, and specific knowledge results from it. The basis of an improved care of people with chronic wounds indicates an evidence-based training of specialists.

Method: In Germany, evidence based further education has been achieved successfully by an approved methodology of the curriculum development. In the field of further education in wound management a medical-scientific professional society developed a curriculum, which bundles up the knowledge of 78 scientific professional societies. It is subject to the steady advancement. The check oriented to the learning targets indicates the base of the accredited personal certification.

Result: The training for wound therapist* thus indicates a chance to create structures. This can contributes to the improvement in the care situation of people with chronic wounds also in integrated care as in special care forms. The interdisciplinary team formation within the quality-supported care chain is supported and a contribution for evidence-based and use-valued methods of treatment is made for people with chronic wounds.

Discussion: In context of this contribution, the curriculum development is described as well as the key benefits and necessities for a personnel interdisciplinary accreditation. Thus the necessity of concentrated curricula is outlined all together in the nursing training.

* WTcert® DGfW (profession)

Health Economics and Outcome

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AN ECONOMIC ANALYSIS OF REPOSITIONING FOR THE PREVENTION OF PRESSURE ULCERS

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Aim: To compare the cost of repositioning individuals using 2 different repositioning regimes - the experimental group (n=99) were repositioned 3 hourly at night, using the 30 degree tilt; the control group (n=114) received standard care (6 hourly turning using the 90 degree lateral rotation).

Methods: Ethical approval was received. The cost analysis focussed on the number of nurses needed per turn, the time per turn and the cost of dressing treatments.

Results: The mean time per turn was 3.01 minutes (experimental), and 5.93 minutes (control). The mean daily nurse time was 18.5 minutes (experimental) and 24.5 minutes (control) ($p<0.001$). For the total study period, the cost of repositioning alone was €19,958.40 (experimental) and €31,270.20 (control). Three pressure ulcers developed in the experimental group,13 developed in the control group. Total pressure ulcer treatment was €3.87 (experimental) and €100.36 (control). Projected annual costs were estimated for those who would require repositioning of all individuals who where hospitalised across the study sites, using the 30 degree tilt compared to standard care. Costs for the 30 degree tilt were €258,402.48, these costs were €509,078.64 for standard care.

Conclusion: Repositioning using the 30 degree tilt is less time consuming, requires less staff and is more cost effective when compared standard care.

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LYMPHOEDEMA PREVALENCE IN IRELAND: A HOSPITAL OUTPATIENT CLINIC BASED PILOT STUDY

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Background: While lymphoedema is not a very common condition, it is associated with significant morbidity and disability among those who are moderately or severely affected. A rational development of services and ensuring appropriate access to effective therapy depends on accurate epidemiological data. International studies suggests a prevalence rate of approximately 2/1000 but to date there is no reliable Irish data.

Methods: we surveyed patients presenting to vascular and wound management outpatient clinics in a university teaching hospital over a four week period. Those with leg swelling were assissted in completing a proforma questionaire. The study had ethical approval and informed consent was obtained from all thsoe completing the questionaire.

Results: There were 542 clinic attendances. Of these, there were 418 unique patients. 20 patients (4%) had leg swelling but 3 of these were of short duration and excluded. Of the 17 with chronic (>3 months) leg swelling, 11 fulfilled pre-determined criteria for lymphoedema yielding a prevelance of 2.3% in this population (67% male). None of these 11 had been previously diagnosed with, or treated for, lymphoedema despite an average duration of lower limb swelling of 2.9 years.

Conclusions: Lymphoedema occurs quite commonly among patients attending vascular and wound management clinics and is not usually recognised in the community. The prevelance of lymphoedema among non-cancer patients in Ireland warrants further characterisation. This preliminary data indicates that the number of patients with undiagnosed and untreated lymphoedma is likely to be substantial and further investigation is warranted.

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IMPROVING OUTCOMES FOR PATIENTS FOLLOWING SURGERY FOR PILONIDAL SINUS

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Method: A high incidence of prolonged wound breakdown was observed following the surgical procedure for the laying open of pilonidal sinuses. Post-operative wound care was for the patient to bathe daily followed by packing the wound with an alginate dressing.

As a pilot study, 10 patients were subjected to a change in practice which involved packing the wound cavity immediately post surgery with a silver alginate dressing with an adhesive foam secondary dressing. Patients were requested to shower rather than bathe, and the frequency of dressing change was reduced to weekly or twice weekly. The outcome in comparison to 10 case matched patients who received standard treatment, was a substantial cost saving and an improvement in healing rates.

While the initial stage of the audit had demonstrated both cost and clinical benefits in the revised practice group, long term follow up was essential before the project could be expanded out into larger numbers of patients.

This stage of the process involved following up patients both by reviewing medical records and by contacting patients by telephone to identify further complications

Results: A twelve month follow-up demonstrated 11 additional surgical interventions in the standard practice group, and only 1 further episode of surgery in the revised practice group.

Discussion: The initial results are encouraging to warrant further studies on this change in practice

Health Economics and Outcome

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A REGIONAL AUDIT OF COMMUNITY BASED WOUND CARE SERVICES IN CANADA

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Aim: Chronic wounds are disabling and constitute a significant burden on patients and the healthcare system. However, community-based care for people with wounds is often fragmented and inconsistent, leading to prolonged healing times and ineffective use of resources. In light of the growing problem and financial restraints, there is a need to examine the existing care of patients with wounds and identify the gaps to improve the quality of care. The objective of this study was to establish the prevalence of various types of wounds and benchmark the care provided for home care patients.

Methods: Regional community based nursing providers were requested to assessment all their clients for wounds and complete a survey developed by the investigators. The location of all open wounds, primary wound etiology, wound duration, and frequencies of nursing visits were documented.

Results: 1353 clients (mean age=63 years) participated with 37% receiving wound care at the time of the survey. Of all the wounds, 36.4% were surgical, 35.1% were leg and foot ulcers, 12.7% were pressure related and 15.8% were miscellaneous. A large portion (34.7%) of the clients had wounds for more than 6 months indicating poor healing and chronic nature of these wounds. 32.9% of these clients were receiving daily dressing changes.

Conclusion: Results indicated a need to develop health policies that address the growing number of stalled wounds and surgical wounds. Best practice should review the practice of daily dressing changes that may not be cost effective.

Health Economics and Outcome

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MAGGOT DEBRIDEMENT THERAPY (MDT): FIVE-YEAR REVIEW

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Aim: Conduct a five-year (2000–2006) retrospective 'intent-to-treat' review for:
1. Number of applications required to debride necrotic tissue to <10% wound base.
2. Calculate the nursing visit cost-efficiency-ratio.
3. Report patient pain.

Method: Data base for MDT use accessed for: application frequency, MDT duration, nursing visit frequency, and debridement rate. Patient out-comes identified were closure, surgical referral, palliative, withdrawal, or death. Calculate cost-efficiency ratio between nursing visit costs week prior and after. Review patient pain reporting.

Results: Sixty-eight patients with devitalized tissue were offered and consented to MDT. 67 (98.52%) debrided except 1 (withdrew). Distribution of number of applications was: one (6), two (21), three (39) and five (1). Therapy days: two (6), five (21), seven (39) and nine (1). Patient outcomes: 56 closed, 10 demonstrated extensive tissue loss with 8 referred for surgery (1 graft; 7 amputations) and 2 palliative. 1 death not wound related. Visit number and cost ($150 Canadian) the week pre-MDT, MDT, and post-MDT was $46050 (307), $27,300 (182) and $16,200 (108) respectively. Nurse visit cost-efficiency-ratio for the debrided wounds compared to pre MDT is 2.8 indicating nearly a third the cost. Only one patient reported increased wound pain and withdrew (previous pain problem).

Conclusion: Wounds requiring debridement, bioburden reduction or stimulation or surgical risk patients benefit from this safe community delivered treatment. Wound healing cannot occur without necrotic tissue removal and bioburden control thus MDT saves health care resources by accelerating debridement and reducing health services.

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DRESSING PURCHASE GROUP: WHAT ARE THE BENEFITS FOR THE QUALITY OF TREATMENT?

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Introduction: In order to improve the purchase performance, a Regional Purchasing Group (RPG) “Dressings and Drapes” was created in 2009 in Ile de France. What does a purchasing group provide to the subscribers’ institution on the quality of care?

Methods: 34 health institutions subscribed. Two purchase processes were launched: a Call for Tender (CT) when a common and unique choice was the aim, and a Framework Agreement (FA) allowing a multi-award for some products.

Results: Respectively 254 and 31 lots were defined for each processes: - CT: compression/immobilization 34 lots; tubular bandage and ropes 33 lots; secondary dressings 40 lots; swabs 20 lots; specialized dressings 37 lots; care kits 19 lots; drapes 70 lots. - FA: operating packs 24 lots; specialized dressings 7 lots.

The economical achievement is estimated between 10 to 24% of savings depending on the subscribers, for a total value of 3,4M€.

Conclusions / Discussion: In the case of the FA, each of the subscribers determines the product to reference with subsequent consultations. This process enables us to incorporate the recommendations elaborated by the “pressure ulcer groups”.

The RPG provides factsheets and selected suppliers information. A launching meeting enables to plan nursing staff training. A common booklet about the right use of dressings and drapes is in the development process.

Beyond the economical interest, the purchasing group with CT and FA is beneficial for the nursing staff training, contributing to the improvement of the professional practices and the quality of care.

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NWPT IN MANAGEMENT OF DIABETIC FOOT ULCERS

Michael Edmonds[1].

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NWPT has become an established method to achieve closure of wounds, including diabetic foot wounds. There are three main groups of post-operative wounds in the diabetic foot which benefit from NWPT. These are well perfused wounds in neuropathic feet, wounds in ischaemic feet that have usually undergone revascularisation, and wounds of diabetic patients with renal failure in the so-called renal foot. NWPT is also useful in treating ulcers of the heel which have also been debrided.

Neuropathic foot: Surgical debridement in the neuropathic foot can lead to extensive wounds with significant tissue loss. Although the neuropathic foot has a good blood supply, such wounds can take a long time to heal. If infection is controlled, these wounds will eventually heal, but the healing may be accelerated by NWPT

Neuroischaemic foot: Infection is a major problem in the neuroischaemic foot and in severe infections, surgical debridement may also be necessary Any surgical debridement needs to be accompanied by an assessment of the arterial perfusion to the foot to evaluate the healing potential of surgical wounds. However, post-operative wounds may be extensive and healing may take a considerable time, despite revascularisation and NWPT is useful again in accelerating wound closure. In some cases, the peripheral arterial disease may be so extensive that it is not possible to revascularise the limb. In these circumstances, NWPT may be useful in achieving healing of the postoperative wound which might have been very difficult in the absence of NWPT.

Renal foot: Digital necrosis is a relatively common problem in patients with advanced diabetic nephropathy leading to the so-called diabetic renal foot If digital necrosis is extensive and associated with infection, it may be surgically removed, leaving post-operative wounds that are difficult to heal. If peripheral vascular disease is present then revascularisation should be also attempted. Even if this is successful, wound healing is still impaired in the diabetic renal foot and NWPT can be used to accelerate healing.

Heel ulcer: All patients with neuropathic or neuroischaemic feet are at risk of decubitus ulcers. The first sign of a heel sore is localized erythema. If pressure is not relieved, a blister develops which fills with serosanguinous fluid. The base of the blister becomes blue and then black. If pressure remains unrelieved, necrosis may develop. Heel ulcers often become secondarily infected, leading to extensive tissue necrosis. Again such wounds should be debrided and NWPT applied.

In conclusion, NWPT is particularly useful on large, complex post-operative diabetic foot wounds and heel ulcers.

Key session: Diabetic foot

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HYPERBARIC OXYGEN THERAPY AND DIABETIC FOOT ULCERS

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Diabetic foot ulcers (DFU) are a common and serious complication of diabetes mellitus. Optimal treatment includes improving circulation, eradication of infection and removal of pressure to the ulcer. In recent years, many efforts have been made to improve and standardize care for patients with diabetic foot disease. Despite these efforts - and the introduction of multidisciplinary team approaches at centers of excellence - 10-20% of ulcers are reported as non-healing.

Systemic hyperbaric oxygen therapy (HBOT) has been proposed as a medical treatment for DFU. HBOT is a medical treatment in which the patient is enclosed inside a pressure chamber, breathing 100 % oxygen at a pressure > 1 atmosphere. This has been demonstrated to have an antimicrobial effect and to increase oxygenation of hypoxic wound tissue. HBOT enhances neutrophil killing ability, stimulates angiogenesis, and enhances fibroblast activity and collagen synthesis.

A typical treatment session for diabetes related foot ulcers involve pressurisation to between 2,0 and 2,5 ATA for periods between 60 and 120 minutes and a typical treatment schedule might involve 15 to 60 sessions.

By searching Medline 12 reports of human studies involving diabetes-related foot pathology and HBOT were identified. The outcome of this review is that HBOT seems to enhance ulcer healing and to reduce the number of major amputations. An enhanced healing rate was also shown in a recently published double-blind randomized placebo-controlled study evaluating the effect of HBOT in patients with DFU.

Key session: Diabetic foot

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NEW TECHNOLOGIES IN THE MANAGEMENT OF THE INFECTED DIABETIC FOOT

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Diabetic foot (DF) is the most frequent chronic complication in both type 1 and type 2 diabetes mellitus, affecting up to 25% of patients at least once in their life and

the most frequent cause of non traumatic lower extremity amputation.

Ulceration in the foot precedes an amputation in 85% of the cases, so that their correct management is essential to prevent the limb loss.

According to the International Consensus' Guidelines for DF, the cornerstone of ulcers' management are the control of infection, revascularization, offloading, systemic and local care; all of the issues must be addressed to cope with this complex and evolutive pathology, in an integrated model of care.

Infection should be managed as aggressively as possible, both surgically, with an early and aggressive debridement, and with systemic antibiotic therapy, which should be aggressive as well.

Local care is the aspect of the DF management that faced the most impressive progress in the last five years: negative pressure wound therapy, combined with new and promising bio-engineered products and surgical reconstructive techniques changed the scenario for many severely affected DF patients.

Recently many different dermal and epidermal substitutes increased the possibility of conservatively treating the infected DF, especially when combined with growth factors both from bio-derived and synthetic sources, shortening the healing time and decreasing the number of major amputations, when inserted in an integrated approach.

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PHARMACEUTICALS TO IMPROVE PERFUSION

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Interventional and/or surgical revascularization is the key treatments of patients suffering from diabetic foot ulcers (DFU) with compromised blood supply. However, in patients with progressive macroangiopathy and/or microangiopathy such a revascularization may not be possible anymore (compromised runoff in patients with severe macroangiopathy) or may not lead to an improvement of tissue perfusion (due to rarification of small vessels in microangiopathy). In this case, pharmaceuticals to improve perfusion may be the ultimate treatment option.

Pharmaceuticals to improve perfusion may act in several ways: (i) dilatation of blood vessels, thereby increasing blood flow and contact time for gas and nutrient exchange; (ii) direct improvement of viscosity, causing less local thrombosis and therefore improving local blood flow; (iii) interference with aggregation and/or coagulation, indirectly improving the viscosity of the blood and avoiding obstruction by local thrombosis; (iv) formation of new blood vessels by angiogenesis, increasing the area of distal blood vessels for the exchange of oxygen and nutrients; (v) modulation of cellular pathways (such as phosphodiesterases or AMP activated protein kinases), leading to multiple beneficial effects (such as inhibition of inflammation, smooth muscle cell proliferation and endothelial apoptosis, increase of fibrinolysis and others). Often, a pharmaceutical exerts not a single but a combination of the before mentioned mechanisms.

Representatives of pharmaceuticals to improve blood flow are:
1. Prostanoids
2 Oral anticoagulants
3. Platelet inhibitors
4. Dextranes
5. Plants (Gingko biloba)
6. Pentoxyphylline
7. Cilostazol
8. Agents under study (Propionyl-l-carnitine, angiogenic growth factors, l-arginine)

Their mechanisms of action, indications as well as the current evidence for their use will be presented and discussed. Possible benefits of certain combinations of these pharmaceuticals will be shown. It is, however worthwhile to mention that other factors such as the correction of risk factors (e.g. quit smoking) and exercise programs may further improve blood flow when taking such pharmaceuticals or even lead to massive improvement without any pharmacological prescription.

Gene therapy and tissue engineering will not be covered in this presentation.

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TOTAL CONTACT CAST (TCC) IN THE MANAGEMENT OF DIABETIC FOOT LESIONS

Jan Apelqvist[1].

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Casting and especially total contact casting has been recognized and often considered the golden standard in consensus documents in management and off

loading of diabetic plantar neuropathic foot ulcers and charcot (osteoarthropathy). However the the strategy has been debated for various reasons and not widely accepted as illustrated in the recently presented EURODIALE study.Non removable total contact casting is a valuable adjunct in the management

of neuropahtic diabetic foot lesions. Based on the results from published studies regarding TCC used as an device to achieve wound healing the advantage as well as complications related to this strategy will be discussed. It can be concluded That TCC in wound management is an valuable adjunct to

achieve healing especially in plantar foot ulcers.However it has to be used in skilled educated experienced hands due to individual specific needs for technical adjustments in strategy (technique, material, frequency oc changes) due to type of lesion,anatomy and patient related factors under close supervision.

Key session: Global relief and acute wound care in disrupted environments

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GLOBAL RELIEF PLANNING IN DISRUPTED ENVIRONMENTS

Guillaume Queyras[1].

[1]*Médecins Sans Frontiéres (Geneva, Switzerland)*

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MANAGEMENT OF WAR INJURIES IN RESOURCE LIMITED SETTINGS: THE ICRC EXPERIENCE

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Since its establishment in 1863, the International Committee of the Red Cross (ICRC) has concentrated its humanitarian mission on protecting the lives and dignity of victims of armed conflicts and other situations of violence and providing them with assistance.

An hostile and insecure environment delaying or preventing patients access to hospitals, lack of qualified specialists who flee dangerous areas, irregular and insufficient supply of medical consumables, lack of blood for transfusion, diagnostic and treatment equipment limitations due to lack of maintenance, repair or spare parts, patients influx in waves and the massive tissue damage and heavy contamination caused by bullets, bombs and mines, all contribute to make war injuries management a major challenge, requiring a different approach when compared to civilian traumatology.

Thanks to more than 30 years experience on the management of war injuries in resource poor settings, establishing and running several independent hospitals and treating more than 100’000 patients under standardized conditions as well as assisting many local hospitals, the ICRC has produced specific guidelines and protocols for the management of war injuries that take into consideration the war scenario challenges and are applicable to austere conditions.

The basic principles of management of war injuries include the following steps: complete and detailed patient assessment, early and thorough wound excision and irrigation, no unnecessary dressing changes, delayed primary closure, antibiotics as an adjuvant, no internal bone fixation, at least in the «acute phase», early physiotherapy and rehabilitation.

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SOFT TISSUE INJURIES IN FIELD SETTINGS

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The soft tissue injuries rate is progressively increasing since world wars till the present peace-inforcing mission in Afghanistan (60-90%).

The mechanism of tissue damage is due to bulletts, improvised explosives devices, primary or secondary missiles and incendiary munitions.

Ballistic, thermal and blast injuries inflict devastating limbs damage, lacerating soft tissue, bone and neurovascular structures.

The Italian Army field organization is composed of mobile hospitals that are shared in Role activities according to the level of health assistance.

The targets of the Role 1 hospital are rescue, life saving treatment and evacuation; the Role 2 duty is reanimation, stabilization, emergency surgery and evacuation. Role 3 hospital is equipped to perform specialized surgery, high diagnostic examination and evacuation. The Italian Role 4 is represented by the Rome Army Military Hospital.

The goal in treatment of soft tissue wounds is to save lives, preserve function, minimize morbidity and prevent infections, through early and aggressive surgical wound care far forward on the battlefield.

Despite advances in complex wound management, appropriate timing of soft tissue injuries treatment still remains subjective, but the six pillars of warfare wound care are:

1. Correct irrigation
2. Foreign material removal
3. Devitalized tissue debridement
4. Prolonged disinfection
5. Suitable dressing
6. Splint for transport.

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BURN INJURIES

Claude Le Coultre[1].

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Burn injuries are truly a public health problem in the developing world. But even in a disrupted environment, burn wounds must be treated according to the same basic principles as in well equipped centers.

First attention is given to immediate life threatening conditions: smoke inhalation and dehydration.

Hospital and human resources must be evaluated. Good care of burned patients requires time, fair amount of material and knowledge. In disrupted environment, burns over 50% of total body surface have little chance of survival.

Local treatment has the following goals: control of bacterial colonization (appropriate debridement), prevention of secondary contaminants, maintaining an environment promoting healing. Good knowledge of the different depths of damage is essential (not always easy at the beginning).

Deep circumferential burns must sometimes be treated by escharotomy to avoid the loss of a limb for example.

After cleaning of the wounds (large amounts of clean water) and debridement, local treatment consists of applying some ointment; silver sulfadiazine remains excellent, but is not the only one. Polymyxin or bacitracin are also good. Some centers in disrupted environments tried other type of coverage, like honey and ghee dressing, papaya or banana leaves, or boiled potato skins. Each center must know what is available and still acceptable, what can be produced locally with minimum budget.

Most of the time, it is best to apply an occlusive dressing, well absorbing, with an inner layer which will not stick to the wounds, although under certain circumstances it is possible to use open therapy.

Dressing changes, cleaning of the wounds should ideally be done every day, but depending on the environment, every other day or even four days may be acceptable. It is essential to avoid damaging healing process.

Analgesia and nutrition should never be forgotten.

Prevention of terrible sequelae must be kept in mind: prevention of contractures and hypertrophic scars, by maintaining good position and splints, mobilization and by obtaining healing of the wounds in a minimum of days (conservative treatment must not postpone skin grafting).

ETRS Guest session: Infection and biofilm: update in new concepts

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INFECTION IN SURGICAL PATIENTS

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Introduction: Surgical Site infections (SSI) are divided into: Superficial, Deep and Organ Space, but only superficial SSI will be covered in this presentation. According to Centre for Disease Control and Prevention (CDC) the definition of SSI is: 1. occurring within 30 days; 2. only involving skin or subcutaneous tissue and 3. one of the following: Purulent drainage, organisms isolated or clinical signs of infection.

Incidence: In clean-contaminated wounds 3 % and contaminated/dirty around 10%. After introduction of prophylactic antibiotics these figures have been reduced to: clean 2.1%; clean-contaminated 3.3%; contaminated 6.4% and dirty/infected 7.1%.

Prophylaxis: SSI is a result of a changed in the balance of microbial conditions and the host resistance.

Prevention of SSI primarily includes: Preoperatively: prophylactic antibiotics, supplementary oxygen, avoid smoking for 6 weeks before surgery, optimal hygienic precautions; Peroperatively: correct surgical incision, short duration of surgery, optimal suture technique and optimal use of surgical materials (sutures, drains, dressings etc); Postoperatively: optimal dressing selection, use of surgical materials and avoiding wound fluid and haematoma.

Treatment: Is based on surgical procedures, use of antiseptic dressings and use of systemic antibiotics. Local wound management, after reopening of the infected incision, can be performed as open treatment or surgical procedures like early or late reclosure.

Conclusions: Different methods for prevention and treatment of SSI are available, but future studies are still needed in order to achieve further decreases in the rate of SSI.

ETRS Guest session: Infection and biofilm: update in new concepts

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INFECTION AND BIOFILM: TREATMENT LATEST ADVANCES

Gerrolt N. Jukema,

Trauma surgeon, The Netherlands

Infection and biofilm formation are severe issues on which doctors, nurses and patients are faced with in daily practice. Once on site an infection has been recognised, in most cases valuable time for early recognition and early treatment was already lost. The longer the delay between recognition of early clinical signs of infection and evident symptoms of an established infection, the more difficult it will be to treat and possible cure the infection, especially in trauma surgery with patients wearing metal of bioimplants. Once the infection shows clinical symptoms, biofilm formation of relevant bacterial specimens (S. aureus, S. epidermidis and P. aeruginosa) has already started. Biofilms are had to treat since most of the time they can't be attacked by antibiotic therapy, due to their hard to penetrate polysacharid membrane complex. Only in their planktonic phase, free moving bacteria can be attacked by antibiotic substances, but this phase is very limited in time. Therefore different therapy modalities are needed based on new scientific based methods to influence and breakdown biofilm formation in daily patient care. Based on basic and experimental research the influence of topical negative pressure therapy in combination with instillation of polyhexanid solution 0.04% and the influence of maggot excretions on biofilm formation and biofilm degradation will be presented in relation to basic knowledge about biofilm formation in trauma patients.

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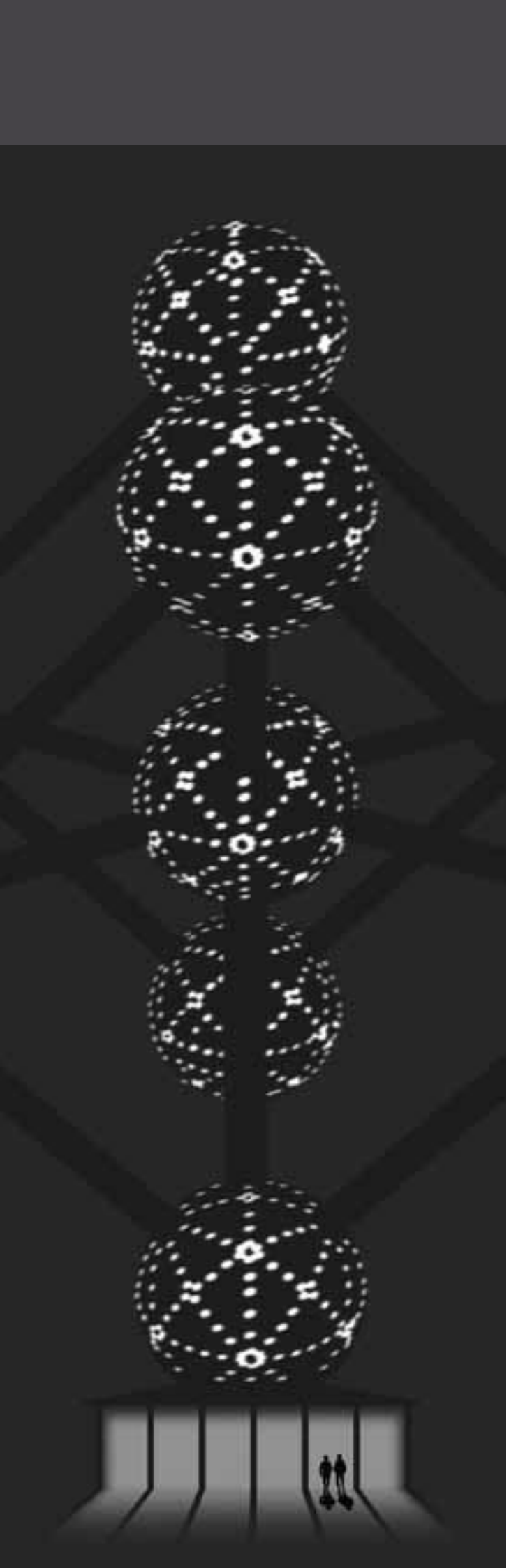

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POSTER PRESENTATIONS

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Acute Wounds

P 1

AN INVESTIGATION INTO THE INCIDENCE, CAUSES, PROGRESSION AND TREATMENT OF PRE-TIBIAL LACERATIONS IN THE ELDERLY

Warren Gillibrand[1], Karen Ousey[1].

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Aim: The aim of this paper is to present data collected following a project investigating incidence of pre tibial lacerations (PTL's) in 2 Accident and Emergency Departments (A & E), current practice and effectiveness of their management

Methods: A systematic literature review was undertaken to determine current state of the evidence in PTL's; a prospective cohort observation/audit of current practice and management of PTL, including healing time, complications, and infection rates. Using a combination of a patient data electronic recording system and direct observational data in the accident and emergency departments, patients were identified who presented with a skin tear/flap laceration sustained to the skin anterior to the tibia and then followed up for a three month period. Demographic, biochemical, co-morbidity and skin tear data were retrieved or recorded.

Results: The literature search and review demonstrates that there is considerable information on specific dressings but less evidence in overall interventions and management. Results from the prospective observation of patients presenting with PTL's, have highlighted that incidence within the 3 month period of data collection is low, (n=19); however care interventions for treatment and management were varied dependent upon the practitioner's personal preference as to choice of treatment.

Conclusions: Further analysis of the prospective study data is required to establish treatment changes as patients progress from acute to primary care services. Whilst incidence is low, the potential for high cost and intensive service intervention in those patients who do not readily heal, is high.

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P 2

A CLINICAL EVALUATION ON THE TREATMENT OF YOUNG CHILDREN WITH HEEL INJURIES USING A HYDROBALANCE DRESSING

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Aim: This paper presents the results of a clinical evaluation conducted in 20 young children (average age was 5 years old) that suffered from spoke wheel accidents. In the Netherlands parents use the bicycle for transport and take their toddlers with them. Accidents happen frequently causing very painful heel flap injuries, which often become infected.

Methods: Conventional dressings and Moist Wound Healing dressings (MWH) are in use. Although most of the injuries heal, dressing changes cause a lot of anxiety and distress for both the children and their parents. For the study wound treatment existed of cleansing with iodine** and rinsing with saline. A HydroBalance* + PHMB dressing was applied, covered with a foam*** and fixed with a retention bandage. The primary dressing was left in place until epithelialization. Wound inspection was every three days for 14 days. During visits the reduction in wound size, wound bed status, epithelialization, pain during dressing changes and occurrence of an infection, was evaluated.

Results: In N = 20 complete epithelialization occurred in an average of 7.2 days. There were no infections noted. The children were less anxious as during the clinic visits they did not experience pain.

Conclusion: Wound healing was fast and child and parent friendly. The treatment was effective, reducing dressing changes and visits.

*Suprasorb® X + PHMB and **Suprasorp P are products of Lohmann & Rauscher GmbH
***Betadine® is a product of BBraun

P 3

FOURNIER'S GANGRENE: A CLINICAL PRESENTATION OF NECROTIZING FASCITIIS CAUSED BY FISTULA COLON SKIN

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Abstract: Fournier's gangrene (FG) is an acute severe necrotizing disease of the fascia, subcutaneous fat and skin caused by a combination of aerobic and anaerobic bacteria, and involves the lower parts of the genitourinary tract, anorectal soft tissue and genital skin. We report an atipical and very rare case of fournier's gangrene caused of skin colon fistula. A 66-year old man developed fever, perineal pain, swelling and blistering of the genital area. After fisrt surgycal treatment, he had progressive involvement of the abdominal wall with abdscess. Early diagnosis of this disorder and prompt initiation of appropriate therapy (laparoscopic sigmoidectomy) can prevent progression of this acute necrotizing infection.

Keywords: Fournier's gangrene; necrotizing fasciitis; adbominal fistula; diverticola.

P 4

USE OF A NEW INTERFACE IN THE LOCAL TREATMENT OF LOSS OF SKIN SUBSTANCE

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[3]*Laboratoires Urgo (Chenove, France)*

Aim: Less painful on removal than traditional moist dressings, the lipidocolloid interface has been being used for around ten years to cover acute or chronic loss of substance of all causes. However, the location of certain wounds sometimes prevents optimum application of this interface.

Since April 2009, a new lipidocolloid interface has been developed, designed to be more conformable than the old version. Thanks to the flexibility of this new polyester mesh coated with carboxymethylcellulose (hydrocolloid) and petrolatum, the new interface closely fits the contours of the wound treated, without sticking to it, thereby enabling painless removal.

Methods: Through two clinical case studies, the authors here report the results of their experiences with this new interface. The two wounds treated were followed up by the medical and paramedical team for a period of 4 weeks. At each visit, a clinical, planimetric and photographic assessment was performed and each wound care procedure was documented.

Results: These clinical case studies demonstrate the good efficacy, tolerance and very high level of conformability of this new interface, related to the flexibility of the new mesh.

Conclusions: This new, more flexible, lipidocolloid dressing closely fits the contours of the wound, particularly in the event of anfractuous wounds or wounds located on the extremities. This new functionality justifies the recent availability of the product to health professionals.

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P 5

«WHEN BAD COMES TO WORSE:» WOUNDS IN THE PERISTOMAL SKIN

Riva Ziperstein[1].

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Aims:

- To define the native of wounds in the peristomal skin through clinical examples
- To outline the appropriate treatments methods
- To present preventative measures aimed at avoiding wound reoccurrence

When living with an Ostomy it is important to keep a healthy peristomal skin, as this is vital for successful adhesion which is essential for living safely with an Ostomy.

Once the skin is damaged, adhesion is reduced and implies an increased risk of leakage and further damage to the skin.

Daily experience shows that local irritation and wounds decrease the quality of life because of pain, burning and leakage.

This presentation offers a wider discussion of the clinical study on the ability of wounds to heal in the peristomal skin and aims to increase the healthcare professional's awareness and better understanding of the early detection and prevention of skin damage complications.

My purpose in this study is to share with you the ways of delivering effective wound care to the stoma patient, based on clinical evidence as well as on my long term experience with stoma patients.

As one of my patients said: «Worse than living with an Ostomy is to live with the inability to feel safe...»

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P 6

TECHNOLOGICAL DEVELOPMENTS IN THE NURSING WORLD

Sima Ben-Shitrit[1].

[1]*Rambam Health Care Campus (Haifa, Israel)*

Developments in the field of biotechnology have brought novel and varied possibilities for the treatment of complex patients with difficult-to-heal wounds, trauma and burns.

There is no doubt that preparing the staff properly, encouraging patients and receiving support from the technology company representatives provided a feeling of security during the first steps.

The use of new technologies represents a significant breakthrough in the treatment process. It also represents a significant part of the work of the nurse who leads and directs the treatment independently and in her ability to lead the changes for the benefit of the patient and the staff.

Negative Pressure is a technology that works on the principle of vacuuming discharges by negative pressure for the treatment of comple x wounds

Fecal Management System is a temporary containment device, indicated for bedridden or immobilized, incontinent patients with liquid or semi-liquid stool. The use of this device enable the collection of fecal matter in a closed process.

Hydrofiber Technology With Silver for the treatment of burns is a widely antibacterial dressing that is used for the local treatment of partial thickness burns.

The use of this dressing minimizes the pain caused by dressing changes.

P 7

CONTEMPORARY OPTIONS FOR SKIN SUBSTITUTION IN ACUTE WOUNDS

Jan Koller[1].

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Aim: Optimal treatment of acute extensive skin losses is always a big problem. The presentation aims to review possibilities for replacement of human skin in acute wounds by both classical methods and latest achievements of in vitro cell cultures and tissue engineering technologies.

Methods: Various biological skin subsitutes have been used for treatment of extensive losses of skin including acute burns and traumatic wounds. In vitro cultures of human keratinocytes and fibroblasts have been routinely provided by the Bratislava Burn Center Central Tissue Bank since more than 15 years. At the same time a biosynthetic dermal equivalent composed of bovine collagen type I and hyaluronic acid* was developed and clinically tested. Commercially available skin/dermal substitutes** have been utilized in patients treatment as well.

Results: Correct initial diagnosis of the particular cases including assessment of the extent and depth of the defects was of utmost importance. Based on the findings, decisions on indications for the most appropriate treatment modalities and tactics have been provided. Optimal timing and provision of surgical procedures was an integral part of the comprehensive patients and wounds care. The advantages and disadvantages of the different treatment options have been evaluated and proposals for appropriate treatment method indications were recommended.

Conclusions: Skin substitutes proved to be extremely useful in treatment of acute extensive skin defects where the classical methods could not offer enough material for rapid wound coverage/closure. Their major disadvantages include relatively poor resistance to infection and higher costs.

*Coladerm H
** such as Integra®

P 8

A LABORATORY EVALUATION OF THE SEALING EFFECTS OF WOUND CONTACT LAYERS

Gen Hulten[1].

[1]*Molnlycke Health Care (Gothenburg, Sweden)*

Aim: To assess the ability of four wound contact layers (WCLs)* to form effective seals on the skin of volunteers.

Methods: Samples of the WCLs were cut to size and applied to the forearms of volunteers. Three drops (each 20µL) of Solution A (an isotonic sodium/calcium chloride solution prepared according to EN 13726-1:2002, to represent wound exudate) with an added red dye were applied to the top edges of the dressing samples. After 5-10 seconds, the volunteers were instructed to move their arms in a controlled manner before the drops were closely inspected.

Results: After the period of arm movement, the drops applied to the top edges of the samples** were still intact whereas there was evidence of liquid moving down between the skin and the other WCLs.

Conclusions: The findings highlight the unique properties of soft silicone technology in that it creates many contact points over the uneven surface of the skin, forming an effective seal with the skin right up to the wound margin. This ensures that exudate is taken up by dressings utilising this technology rather than it leaking out on to the peri-wound skin where it can lead to maceration.

*Mepitel® (Molnlycke Health Care) with Safetac® (soft silicone) on both sides; Mepitel® One (Molnlycke Health Care) with Safetac (soft silicone) on the wound contact side only; Adaptic™ (Systagenix); Urgotul® (Laboratoires Urgo)
** Mepitel and Mepitel One

Acute Wounds

P 9

EXPERIENCE OF APPLICATION OF LIPIDOCOLLOID TECHNOLOGY DRESSINGS IN LOCAL TREATMENT OF BURNS

Andrey Alekseev[1], Alexandre Bobrovnikov[1], Nathalia Malyutina[1], Arsen Avagimyuan[1], Sergei Popov[1].

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Aim: To evaluate the efficacy of dressings with Technology Lipido-Colloid (TLC) in burns local treatment.

Methods: The study evaluated clinical efficacy of TLC dressings in local treatment of 33 burned patients. Average age of patients was 43.3±2.2, TBSA was 28.2±2% including 5.2±1.6% of full-thickness burns. We assessed terms and quality of wound healing for first and second degree burns and preparation terms for skin grafting after surgical necrectomies in patients with full-thickness burns.

Results: The study showed TLC dressings high efficacy in treatment of patients with burns of I-II degrees. Terms of epithelialization were least after application of silver sulphadiazine TLC dressings. During treatment of limited burns of II degree by silver absorbent dressings, it was observed cleansing of wounds from necrosis and active epithelialization from remained cutaneous appendages.

The preparation terms of III degree burns for skin grafting after surgical necrectomies were the same for silver sulphadiazine TLC dressings and for silver absorbent dressings.

We also applied TLC dressings without silver as cover for 1/4 meshed skin grafts. In these cases, terms of epithelialization took at average 8 days.

All evaluated dressings did not require preliminary preparation, were well adherent on wound surfaces, noninvasive and comfortable for patients.

Conclusions: TLC dressings are effective in treatment of burns. Application of silver sulphadiazine TLC dressings resulted in noninvasive and painless management of Ist- and IInd- degree burns. It was also possible to use TLC dressings as cover for meshed skin grafts.

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FEEDBACK ON THE USE OF A SECONDARY HERMETIC* DRESSING IN EQUATORIAL FORESTS (GUYANA)

Hugues Lefort[1], Pierre-Emmanuel Romanat[2], Aristide-Naklan Ouattara[3], Thomas Demoures[4], Jean-Philippe Pradier[2].

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[3]*Hôpital d'instruction des armées Percy (Clamart, France)*
[4]*Hôpital d'instruction des armées Bégin (Saint-Mandé, France)*

Materials: The secondary hermetic* dressing used in our test is made of a polyurethane film and a silicone based gel. This gel, applied on the perimeter of the primary dressing, makes the secondary dressing hermetic. The properties of this class I medical device are very useful in military environments by protecting an acute injury or a wound that is in the process of healing.

Methods: We tested it on French military personnel fighting against illegal mining in Guyana. 16 dressings were placed for several hours to three days, as a covering for different primary dressings. The equatorial forest conditions are particularly tough: environmental humidity, repeated immersions in unsanitary water, multiple vegetal, animal and equipment aggressions during the progression into the forest through clothing and in the framework of physical activity.

Results: Dermatological lesions are the main causes of medical consultation and exemptions. The promises of the dressing held remarkably for the 16 placed devices. They allowed the pursuit of a satisfactorily led healing without interrupting the military missions in the equatorial forest.

Conclusions: This hermetic dressing limited the decrease in the operational capacity of our military personnel by reducing the days of exemption in the equatorial forest. Its use must be tested in other atypical and more conventional conditions.

* Secuderm®

P 11

USE OF A NEW SKIN SUBSTITUTE* FOR THE TREATMENT OF A DEEP BURN OF THE FACE

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[1]*CHU Bordeaux (Bordeaux, France)*
[2]*CHU Bordeaux (Bordeaux, France)*

Introduction: The functional and aesthetic benefit of the treatment of burn wounds with skin substitutes was clearly emphasized during the last 10 years. But until now, the available dermal substitutes required two operating procedures. A new skin substitute* (artificial dermal matrix of collagen and élastine) presents the advantage of an immediate coverage by a skin graft, to reconstitute a total equivalent skin in a single-stage surgical procedure. This study demonstrate the benefits of the new skin substitute* for the treatment of an extensive deep burn of the face, involving the frontal bone.

Methods: The case: a patient, 59 years, who sustained a flame burn. The evaluation of the burn shows 35% TBSA burn with 33% full thickness burn, involving head and neck areas, superior limbs and anterior thorax.

The deep burn of the face involved all the functional structures, and a partial bone exposure of the frontal bone. The management of this burn included an early surgical debridement of tissues and exposed bone and coverage with the new skin substitute* and skin grafting in a single stage surgical procedure.

Results: The healing time of the wound is not quite different than observed with the classical skin autografting procedure. The coverage is effective even if there is a bone exposure. At 8 months, the quality of functional and aesthetic results is good.

Conclusion: The use of artificial dermis appears as a reliable and cost effectiveness technique for the treatment of deep burn wounds which allows the regeneration of a good quality dermal component and good functional results.

* Matriderm®

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WITHDRAWN

Basic Science

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REMANENT EFFECT OF ANTISEPTIC SUBSTANCES ON HUMAN SKIN

Peter Goroncy-Bermes[1], Vera Melichercikova[2], Jan Urban[2].

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Aim: No data have been published that show the principal remanent effect of active ingredients used for the treatment of superficial infections, preoperative skin disinfection or wound antiseptic in a comparative study. Therefore, we investigated the remanent effect of PVP iodine, chlorhexidine and octenidine.

Methods: Five disinfecting solutions were tested which contained 70% (v/v) 2-propanol, 70% 2-propanol + 0.5% (w/v) chlorhexidine, 70% 2-propanol + 2% (w/v) chlorhexidine, 70% 2-propanol + 1% (v/v) PVP iodine, or 70% 2-propanol + 0.1% (w/v) octenidine dihydrochloride, respectively. The remanent effect was evaluated on upper arms of fifteen volunteers according to the DGHM guideline for skin disinfection.

Results: Ten minutes after treatment, antiseptics containing PVP iodine, chlorhexidine or octenidine had a significantly stronger impact on the microorganisms of the human skin than isopropyl alcohol without any additional active ingredient. The highest cell reduction was obtained with the alcohol solution containing 0.1% octenidine. Moreover, the regrowth of the resident flora from 10 min to 6 hours after treating the skin with that solution was very low compared to 70% isopropanol without any other active ingredients. The remanent effect of octenidine was also significantly higher than that of 0.5% chlorhexidine and 1.0% PVP iodine. The results obtained with 2.0% chlorhexidine were quite similar to those of octenidine.

Conclusions: The results demonstrate that solutions containing 2.0% chlorhexidine or 0.1% octenidine are suitable to prevent regrowth of microorganisms on skin.

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EXPOSURE OF BACTERIAL BIOFILMS, DEVELOPED IN A CDC BIOFILM REACTOR, TO SILVER BASED HYDROGELS

Steven L Percival[1], Brian Hamerslag[1], Alistair Copley[1], John Nosworthy[1].

[1]*Advanced Medical Solutions (Winsford, United Kingdom)*

Aim: To evaluate the efficacy of commercially available, and next generation silver hydrogels, on *in-vitro* biofilms.

Methods: The microroganisms used in this study included *Staphylococcus aureus* ATCC6538, *Candida albicans* ATCC10231 and *Pseudomonas aeruginosa* ATCC9027. Bacterial biofilms were generated using the CDC biofilm reactor*. The biofilm reactor was inoculated with 1ml respective test strain culture and the reactors were maintained at steady state for 8 hours. The biofilm reactor was then maintained at a continuous flow rate for 72 hours. Coupons were then aseptically removed from the CDC biofilm reactor and transferred to sterile 12 well microtitre plates containing respective hydrogels. Bacterial biofilms were exposed in triplicate to the hydrogels for periods of 2, 8 and 24 hours at 37°C. Subsequent to this, coupons were transferred to10ml neutralisation buffer and agitated in a Griffin shaker for 60 seconds, followed by 30 seconds pulse-vortex mixing. Exposure data was expressed graphically using Sigma Plot 8.0. A students T-test was used to compare the CFU counts obtained between exposure times. Data was analysed using SPSS version 16.

Results: When *P. aeruginosa* biofilms were exposed to the 'next generation' silver gels this resulted in a 5 log reduction following 2h exposure ($P<0.05$) and a 5.57 log reduction in *S. aureus* following 8 hours exposure ($P<0.05$).

Conclusion: The 'next generation' silver gels evaluated in this study exhibited anti-biofilm characteristics to a significantly higher degree than existing commercially available silver hydrogels.

* BioSurface Technologies Corp, Montana, US

P 15

REDUCING WOUND COLONIZATION BY "REPLACEMENT THERAPY" (PROBIOTICS) USING LACTOBACILLUS REUTERI, IN A TRIPHASIC WOUND MODEL

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Aim: To evaluate the use of *Lactobacillus reuteri* on biofilms containing wound pathogens.

Methods: Biofilms were made using singular, paired, and three species of *Pseudomonas aeruginosa*, *Staphylococcus aureus*, and *Candida albicans,* suspended in 30% poloxamer F127. Mouse fibroblast cells were maintained using tissue culture media with 10% fetal bovine serum and standard antibiotics. The biofilms were separated by a filter (Whitman #3) to determine diffusible products transferred between the biofilm and fibroblasts. Two strains of *L. reuteri* were obtained*. The completed triphasic model was incubated at 37°C for 24 hours in 5% CO_2 at pH 7.0 or 5.5.

Results: The model optimized individual growth of the eukaryotic and prokaryotic cells. The impact upon fibroblasts and positive trypan blue dead cells increased with the number of biofilm prokaryotes (1-3) ranging from $2x10^4$ to $9x10^4$ after 24 hours. Interestingly, the monospecies toxicity was observed the most with *S. aureus* and least with *P.aeruginosa*. A 24 hour biofilm of *L. reuteri* decreased the toxicity by ≥40% for each of the pathogenic combinations (1-3). Pretreatment with *L. reuteri* was most effective in reducing the consequences of the complex biofilm.

Conclusion: Replacement therapy represents a viable non-antibiotic/antimicrobial option for chronic wound management paticularly for early treatment.

* from Biogaia®, Sweden

P 16

THE ROLE OF MATRIX METALLOPROTEINASES IN WOUND HEALING

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Aim: Recent advances in understanding of chronic wound biology have led to new and innovative therapeutic approaches. Increasing numbers of patients with chronic wounds represent major challenges and are a significant burden in terms of cost and impaired quality of life.

A chronic wound is characterised by non resolving inflammation. Increased neutrophils and macrophages produce large amounts of inflammatory mediators and proteinases leading to increased exudate production.

Methods: Proteinases are classified into four groups including Metalloproteinases. MMPs are necessary components of the wound healing process. If activity is uncontrolled they can collectively degrade almost all the extracellular matrix (ECM). Tissue inhibitors of MMPs (TIMPs) are produced to inhibit activity in order to maintain physiological and pathological processes.

Results: Early studies provide correlative data by analysing and comparing acute and chronic wound fluid. Results provide evidence that levels of MMP and reduced TIMPS are found in chronic wound fluid (Wysocki et al, 1993).

Further studies expand on earlier findings to show that elevated levels of MMPs exert effects on other key functional molecules (Trengrove et al, 1999).

Tissue biopsy does allow direct analysis of a wound. Lobmann et al (2002) have extended observations through biopsy analysis to determine MMP expression in diabetic foot ulcers.

Conclusion: The evidence demonstrates there is a need to support and develop services to undertake research. Recommendations include directing research to balancing contributory factors and addressing underlying pathology, further research to provide a suitable animal model with comparable human complexities, and continue therapeutic approaches targeting MMP activity.

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INFLUENCE OF NANO-OLIGOSACCHARIDE FACTOR (NOSF) ON SKIN HEALING

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Aim: Epithelialisation – the last phase in the healing process – follows the formation of granulation tissue. Keratinocytes migrate and proliferate before reconstituting the epidermis and the dermal-epidermal junction. Nano-oligosaccharide factor (NOSF) accelerates the healing of chronic wounds, in particular by regulating MMPs during the granulation phase (during which granulation tissue is formed). The aim of this study was to assess the influence of NOSF up until complete healing – i.e. epithelialisation – was finished.

Methods: In order to demonstrate the activity of NOSF on complete healing, NOSF was applied topically to epidermal lesions caused by UVB radiation on skin explants kept alive for 11 days. The healing activity was evaluated by observing the general morphology of epidermis and dermis, and by specific immunolabelling of fibronectin, cytokeratins 10 and 14 and integrin a6b4.

Results: After 11 days of treatment, NOSF shows a very good healing activity, characterised by the presence of a marked epithelial tongue. NOSF induces a clear over-expression of cytokeratins 10 and 14, thereby improving epidermal regeneration. It also stimulates expression of integrin a6b4, an important element for the restructuring of epidermal basal layers and dermis-epidermis junction.

Conclusions: The in-vitro observations performed in this model established that NOSF present a bright healing activity until complete healing is achieved.

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WOUND SURFACE PO2 IMAGING DURING PHYSIOLOGICAL CUTANEOUS WOUND HEALING

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Aim: The role of oxygen in cutaneous wound healing is poorly understood. We studied wound surface pO2 during physiological wound healing and the impact of the stratum corneum (SC) on surface pO2 as the SC is supposed to be a major constituent of the epidermal oxygen barrier.

Methods: Split-thickness skin graft donor sites (n = 12) served as a standardized wound model. Wound surface pO2 was measured at 1, 6, and 14 days after split-skin harvesting using two-dimensional luminescence lifetime imaging (2D-LLI) of palladium (II)-meso-tetraphenyl-tetrabenzoporphyrin (Pd-TPTBP) embedded in polystyrene-co-acrylonitrile (PSAN) particles on transparent foils. In another experiment the SC (n = 10) was removed by tape strippings to study the impact of the SC on the epidermal oxygen barrier.

Results: Split-skin donor site pO2 on day 1 was 57.90 ± 5.49 mmHg, 22.14 ± 6.18 mmHg on day 6 and 6.32 ± 3.24 mmHg on day 14 after harvesting (each decrease $p < 0.001$). Regional differences in pO2 within donor site wounds were visualized. There was no difference in pO2 before and after SC removal.

Conclusions: The re-establishment of the epidermal barrier during wound healing is reflected by decreasing pO2 values. The SC is not a major constituent of the epidermal oxygen barrier.

P 19

BIOFILM IN CHRONIC WOUNDS

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A biofilm can be described as a microbial colony encased in a polysaccharide matrix which can become attached to a wound surface (Bjarnsholt et al, 2008).This can affect the healing potential of chronic wounds due to the production of destructive enzymes and toxins which can promote a chronic inflammatory state within the wound. This can be poly-microbial and can result in delayed wound healing, chronic infection which is resistant to antibiotics leading to prolonged hospitalisation for some patients. There appears to be a correlation between biofilms and non-healing in chronic wounds (Harding et al, 2008). A hypothesis that is current but needs refinement is that biofilms are a major player in the chronicity of wounds (Singh & Barbul, 2008).

In developing this novel poster a literature search was conducted using the following databases: Cochrane, Cinahl, PubMed and HMIC.

The poster examines the following aspects of a biofilm,

- Definition of a biofilm
- Characteristics of biofilms
- Diagnosis
- Implication to wound care and
- Treatment options available

Biofilms are recognised by some professionals within wound care. They are a complex concept to diagnose and treat as there is limited evidence for biofilm based wound care. This poster aims to raise awareness of the process to detect and treat a biofilm within a complex wound.

This poster was completed in part fulfilment of the MSc Advancing Practice in Tissue Viability at the University of Hertfordshire.

P 20

THE EFFECTS OF ANTIGENICITY OF ADIPOSE-DERIVED STEM CELLS ON WOUND HEALING

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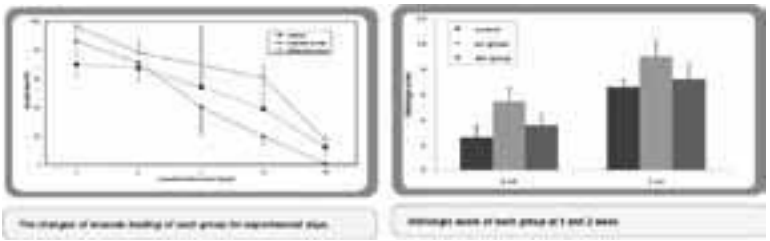
Aim: Adipose-derived stem cells (ADSCs) are multipotent cells which have been found to promote wound healing through angiogenesis and re-epithelialization. The antigenicity of ADSCs is known not to effect stem cell therapy. This study was designed to investigate the effect of antigenicity on wound healing.

Methods: Adipose tissue was harvested from the epididymal fat pads (BALB/c and C57BL/6 mice). 24 mice (BALB/c) were divided into three groups; the isogenic, allogenic and control group. Two full-thickness defects (6mm-diameter) were created on the back. $1x10^6$ ADSCs from BALB/c mice were applied in the isogenic group. For allogenic group, ADSCs from C57BL/6 mice were applied. 100 µl PBS only was in the control group. Digital images were analyzed to assess the change in size. Tissue was obtained for histological analysis including epithelialization, granulation tissue and angiogenesis (7th and 14th day).

Results: Wound sizes decreased in all three groups. The isogenic group had a lower rate of wound healing compared to the control group at day 3, but at day 10 and 14, significantly more rapid ($p<0.05$). Histological findings also revealed in the isogenic group.

Conclusions: The antigenecity of ADSCs is generally known not to affect cell therapy. However, when isogenic ADSCs were applied to wounds, they presented a faster rate of wound healing compared to controls. These findings suggest that cell therapy targeted at enhancing wound healing may benefit from the use of ADSCs with identical antigenecity, as opposed to allogenic or xenogenic ADSCs.



Basic Science

P 21

SIMILAR BIOLOGICAL EFFECTS OF GREEN AND BLACK POLYURETHANE FOAM IN NEGATIVE PRESSURE WOUND THERAPY: GREEN FOAM FACILITATES MONITORING OF WOUND STATUS, BLEEDING AND EXUDATE

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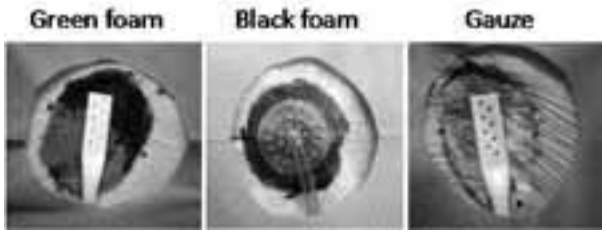
Aim: Green polyurethane foam has been developed for NPWT to have similar biological effects as black polyurethane foam but allow easier monitoring of the wound status. The study aimed to compare green foam, black foam and gauze under NPWT with regard to biological effects on the wound and appearance during treatment.

Methods: Wounds on the backs of sixteen pigs underwent NPWT using gauze, green or black foam. The wounds were imaged and the biological effects were examined with regard to pressure transduction, blood flow, wound contraction, microdeformation and granulation tissue formation.

Results: Wound exudate and bleeding can easily be monitored when using gauze and green foam, while this is concealed by black foam (Figure). The biological effects of black and green foam are similar. Gauze offers slightly less wound contraction and hypoperfusion which may relate to the differences in granulation tissue formation. There is no ingrowth into gauze and less force is needed for its removal.

Conclusions: Green and black foam have similar biological effects in the wound bed. The wound status, i.e. bleeding and exudate, can more easily be monitored with green foam than black foam. There are differences in the wound bed tissue morphology treated by NPWT using foam and gauze which is in accordance with clinical observations that granulation tissue under foam is thick but fragile while under foam it is thinner but dense.



Basic Science

P 22

PROTECTING VITAL ORGANS FROM BLEEDING AND RUPTURE DURING NEGATIVE PRESSURE WOUND THERAPY

Malin Malmsjö[1], Sandra Lindstedt-Ingemansson[2], Richard Ingemansson[2].

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Aims: There are deaths and serious complications associated with the use of negative pressure wound therapy (NPWT). Bleeding occur in vascular grafts, in sternal and groin wounds. These tissues are however often exposed to negative pressure due to lack of other effective treatment. Heart rupture and death is the most devastating complication and may occur during the treatment of poststernotomy mediastinitis. We have developed an organ protector to avoid complications.

Methods: Sixteen pigs underwent median sternotomy followed by NPWT. An organ protector was constructed using a perforated plastic rigid material. This device was placed inside the thorax between the heart and the sternal edges. The interaction of the heart and lungs with the organ protector and the hemodynamic effects were examined.

Results: NPWT without the organ protector caused the heart to be sucked up the sharp edges of the sternum jutted into and deformed the anterior surface of the heart resulting in epicardial bleedings. The rigid barrier protected the heart and lungs, while four layers of paraffin gauze had no such effect. Heart and lung function was preserved when using the organ protector.

Conclusion: There are hazardous events associated with NPWT in sternotomy wounds, namely risk for heart and lung injury. Inserting a rigid barrier protects the heart and lungs. Organ protection may also be applicable in other wound types with underlying vital organs such as abdominal wounds and wounds with exposed vascular grafts and nerves.

P 23

DIGITAL WOUND IMAGE ANALYSIS

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Introduction: Accurate wound measurement is important task in chronic wound treatment, because changes of wound size and tissue types are indicators of the healing progress. Towards elimination of subjective wound parameters estimation, we developed color image processing software witch analyze digital wound image, and based on learned tissue samples perform tissue classification. Information about the percentage of each tissue is important determining factor for wound healing progress.

Methods: Initially five wound experts classified wound tissue type on 50 randomized digital wound images. Classification were repeated three times during three weeks, and mean percentage of tissue type were calculated for each wound. This way tissue types were determined and on these classification we developed advanced statistical pattern recognition algorithm based on color information which were implemented in application. Application also includes the therapy proposition module, implemented as the fuzzy expert system with 36 rules.

Result: result of the analysis contains the wound image represented in pseudo colors as well as percentage of tissue types within the wound area. Local wound treatment is proposed based on calculated tissue percentages and user defined amount of wound exudation, the depth of wound and infection. Accuracy of digital image analysis is more than 90%.

Conclusion: Developed application for digital wound image analysis gives objective, reliable and reproducible results, allowing unique and objective comparison of treatment results between different methods and different institutions.

P 24

ADIPOSE-DERIVED EXTRACELLULAR MATRIX AS A BIOLOGICAL SCAFFOLD MATERIAL FOR WOUND HEALING

Jong Won Rhie[1], Jo A Kang[1], Joong Ho Lee[1], Deuk Young Oh[1], Young Joon Jun[1].

[1]*The Catholic University of Korea (Seoul, Korea, Republic of)*

Biomaterials that induce wound regeneration and adipogenesis may ultimately serve as alternatives to traditional tissue reconstruction and regeneration technologies. In addition, these materials can provide environments for studying factors that regulate wound healing and adipogenesis.

In this article, we hypothesized that human adipose tissue contains many and much proteins as well as adipose derived stromal cells. So we investigated the potential of adipose-derived extracellular matrix to induce tissue regeneration for wound and adipogenesis. Adipose tissue derived extracellular matrix (ADECM) containing basement membrane (BM) proteins and growth factors were extracted from human subcutaneous adipose tissue. We conducted initial analysis of ADECM to identify their components which could be responsible for adipose tissue induced tissue regeneration and found that ADECM contain a complex mix of proteins, and Western blots and ELISAs revealed the presence of important BM constituents including laminin α4, collagen IV, nidogen and fibronectin, etc. And to confirm the possibility of ADECM as a biological scaffold material, we manufactured ADECM gel form by controlling the temperature and pH and evaluated for their effects on human adipocytes. Theses ADECM appear to provide a positive environment for preadipocyte differentiation in vitro and the seeded preadipocytes on ADECM matrices have aggregated and formed large, lipid-loaded colonies.

In conclusion, this study suggests ADECM may lead to a new material for tissue repairment and providing an environment for studying cell-matrix interactions in adipose tissue engineering technologies.

Basic Science

P 25

MATRIX THERAPY RGTA BASED REGENERATIVE MEDICINE: CLINICAL STUDIES IN SEVERE CHRONIC WOUNDS AND DIABETIC FOOT ULCERS AND DEVELOPMENTS IN PLASTIC SURGERY

Denis Barritault[1], P. Degranges[2], G. Zakine[3], A. Al Malaq[4], L. Chaieb[5], I. Slim[5], H. Tajori[5], S. Groah[6].

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[2]*H Mondor University Paris 12 Hospital (Paris, France)*
[3]*Dept of Plastic surgery, Tours University hospital (France)*
[4]*Dept of Plastic surgery, King Faisal university Hospital (Riyadh, Saudi Arabia)*
[5]*Dept of endocrinology, Farhat Hached university Hospital (Sousse, Tunisia)*
[6]*Medstar Georgetown University Medical center (Georgetown, United States)*

Heparan sulfates (HS) are key elements of the Extra cellular matrix (ECM) scaffold and the storage/protection sites of peptide signals identified as local regulators of tissue homeostasis such as growth factors (GF), cytokines, chemokines etc...

We have engineered biodegradable nano-biopolymers named RGTA for ReGeneraTing Agent to replace HS in the wounded tissue; protect GF and regulate their bioavailability. By restoring a microenvironment mimicking the initial ECM architecture, the natural process of tissue homeostasis can resume. This matrix therapy based technology was validated in 70 published preclinical studies. A specific RGTA (polycarboxymethylgucosesulfate or PCMGS), adapted to treat chronic skin ulcers, is on the market*. Several clinical trials and studies performed in France, US, Tunisia, middle East have now demonstrated unique efficacy of to induce wound closure and saved many patients from amputation when no other treatment showed efficacy. PCMGS revealed a very potent local pain killing activity. Over a thousand of patients have now been treated and PCMGS is well tolerated with only very few cases of local adverse delayed hypersensitivity, as described for heparinoids. A survey of theses data and trials will be presented.

All together PCMGS is a new class of therapy offering a unique efficient solution to treat chronic diabetic foot ulcer and more generally to chronic wound healing and regenerative medicine.

* Commercial name is CACIPLIQ20, produced by OTR3

Devices and Intervention

P 26

LOW FRICTION MATERIAL IN THE PREVENTION OF FRICTION TRAUMA IN BEDBOUND PATIENTS

Sylvie Hampton[1], Steve Young[1].

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Limited mobility subjects patients to shear forces, causing pressure ulcers (PU). Reduction of shear reduces PU and cost. The product has a unique design, with virtually zero friction property.

Aim: to evaluate potential in prevention of shear in heel and sacral sites of bedbound patients. Skin assessment relies on subjective judgements. High frequency diagnostic ultrasound was used to provide objective data.

Method: Thirteen bedbound patients with 8 grade one heel and 5 grade one sacral PU were scanned using 20 MHz B-mode ultrasound. With heel PUs a boot was applied to one heel made from test material, the other continued standard care. All sacral damage used test material pants. Further ultrasound scan assessments were weeks 2 and 4. These scans were analysed to calculate relative distributions of low echogenic (an indicator of oedema) and high echogenic pixels.

Ultrasound initially demonstrated high oedema in all PUs. After 2 weeks test material use, the number of low echogenic pixels had decreased and pixel distribution moved towards a normal, indicating that levels of oedema were falling. In heels not covered by test material, pixel distribution patterns had not altered significantly from visit one. By week 4 oedema levels, in treated areas, had fallen to that of normal skin (demonstrated by relative distribution of low and high echogenic pixels), whereas untreated areas still had high levels of oedema.

Results / Conclusion: the test material stopped PU development in vulnerable areas and use over a 4 week period returned skin to a normal profile.

P 27

EXPLORING THE BARRIERS TO ADOPTION OF NEGATIVE PRESSURE WOUND THERAPY IN THE COMMUNITY SETTING

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[2]*Huddersfield University (Huddersfield, United Kingdom)*

Aim: To explore community tissue viability specialist's (TVN's) experiences and attitudes towards the use of NPWT in community settings.

Method: A literature review was undertaken to identify themes and a discussion guide was drawn up prior to the meeting to act as an aide memoir on the day. Invitations to participate were sent to 20 practitioners. The focus group was conducted in a single session with 9 TVN's and lasted for 4hours. It was carried out in compliance with relevant ethical guidelines, participant consent was taken to record the discussion using MP4 players. Three researchers were present one of whom chaired the meeting, the others took notes. The recordings were transcribed verbatim independent of the researchers and compared to the written notes taken on the day for validity.

Results: Data analysis identified numerous themes most notably untimely referrals; cost implications and mutual benefit and understanding with relation to professional and patient experience / attitude.

Conclusions / Discussion: The focus group interview highlighted that NPWT may help to improve patient care and decrease costs associated with numbers of visits. It was stressed that there was a need for clear inclusion and exclusion criteria specific to NPWT use in a community setting. The following inclusion and exclusion criteria were proposed (see table 1).

Table 1: Inclusion – Exclusion Criteria for use of NPWT in the Community

Inclusion Criteria	Exclusion Criteria
Wound assessment	Contraindications
Support	Psychological elements
Patient issues	Home environment
Referrals	Acute vs. Chronic
Funding and Budget pathways	Quality of Life

P 28

THE EFFECT WOUND BED STATUS OF A IONIC SILVER DRESSINGS IN CANCER PATIENTS WITH MALIGNANT FUNGATING WOUND

Shu-Fen Lo[1], **Ching-Uen Huang**[2].

[1]*Tzu Chi College of Technology, School of Nursing (Hualien, Taiwan)*
[2]*Department of Dermatology, Cheng Hsin Hospital (Taipei, Taiwan)*

Aim: This study examined the effectiveness of a silver ionic dressing on wound bed status of head and neck cancer patients with malignant fungating wounds (MFW)

Methods: A randomized control trial, single blinding and parallel experimental study design was developed and implemented. Subjects were recruited from a 1,000-bed academically based medical center with six special units ward head and neck cancer patients with MFW in north Taiwan. A total of 32 MFW participants were randomly assigned to silver dressing (SD) group (n=14) or non silver dressing group (NSD) (n=18) with a follow-up of two week. Primary outcome variables was wound bed status . Secondly outcome variables was health related quality of life.

Results: There was no significant difference in demographic variables between SD and NSD groups (p>.05).Firstly, a Wilcoxon test for paired observations test was used to examine the change in MFWAT-N from pretest to posttest in each group. Significant statistical differences (t =4.62, P=.001) were demonstrated in the experimental group; while no significant statistical differences (t =26.72, P=.000) was shown in the control group. MFWAT-N, bleed, and amount of exudate was significant difference in demographic variables between SD and NSD groups.

Conclusions: MFW has a negative impact on HRQOL. Hydrofiber dressing that contains silver control malodor, exudates, amount of exudates in patients undergoing MFW palliative period. Further studies exploring a longer term follow up are also required.

Devices and Intervention

P 29

SURFACE ACCOUSTIC WAVE PATCH GENERATES HEALING IN HARD TO HEAL WOUNDS

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[2]*Dean PreClinical Sciences New York College of Podiatric Medicine (New York, United States)*
[3]*Director Dept of Pathology North Genral Hospital (New York, United States)*
[4]*Director Dept of Pathology Shaarei Zedek Medical Center (Jerusalem, Israel)*

Aim: Low Intensity, Low Frequency ultrasound (LILFU) and Surface Acoustic Waves (SAW) delivered by a patch device*, keep most of its acoustic energy at the surface of the wounds, allowing its benefits to localize and focus in the skin and dermal tissue. LILFU/SAW utilized for this study have an maximal penetration of 3 cm. They also have a radial spread of approximately 20 cm squared allowing it to effect a large target area.

Methods: The effects of LILFU/SAW patch* on chronic wounds from a microbiological and cytological aspect were evaluated. Patients were given treatment with the LILFU/SAW patch* for 8 hours of cycled treatment (30 min. on / 30 min. off) for the period of 1 week. Patients were then allowed to continue use of the device until wound closure.

Results: Microscopic evaluation (H&E staining) showed an increased robustness to the granulation tissue after LILFU/SAW treatment. There was an increase in active fibroblasts as well as an increase in blood vessels in the base of the biopsy sample and an increase in GAG's and the number of cells in mitosis. There was a significant decrease in the bacterial load of the tissue and

Over 70 percent of the wounds closed within 10 weeks.

Conclusion: LILFU/SAW Patch* has a positive affect in stimulating the precursors to dermal and epidermal growth. It is a useful adjunct to wound care. Because of its size and low intensity it can be used in a much more effective way than standard therapeutic ultrasound.

* PainShield - NanoVibronix

Devices and Intervention

P 30

IBUPROFEN FOAM DRESSINGS FOR WOUND PAIN POTENTIAL AS SUBSTITUTE FOR ORAL NSAIDS TO REDUCE SYSTEMIC SIDE EFFECTS

Birte Petersen[1], Henrik S Knoth[2], Ole K. Nielsen[2].

[1]*Independent consultant (Skodsborg, Denmark)*
[2]*Clinical Development, Coloplast A/S (Humlebaek, Denmark)*

Aim: Half of the patients suffering from painful leg ulcers use oral pain killers, mainly NSAIDs or opioids. NNT»s for oral NSAIDs and opioids are about 3-5. NSAIDs cause serious side effects like GI-bleeds with yearly frequencies of about 1%.

The Ibuprofen foam is the only available wound dressing containing an analgesic (Ibuprofen). It causes local pain relief only, as systemically absorbed ibuprofen is not detectable. The aim was to estimate the ibuprofen foam's potential to reduce the need for oral pain killers (avoid their systemic side effects).

Methods: A pain relief score of at least 50% of the maximum is a validated, clinically meaningful outcome; the proportion of patients with this score was determined in two controlled ibuprofen foam trials (973 patients) which contained data on pain relief.

Results: Overall, two-thirds of Ibuprofen foam treated patients reported pain relief of at least 50% compared to one-third of those treated with moist-wound-healing dressings, giving NNTs for Ibuprofen foam of 3-5.

Conclusion: Local wound pain treatment with Ibuprofen foam dressing appears to provide pain relief of the same order as oral NSAIDs or opioids. Therefore, hypothetically, one third of the patients taking oral NSAIDs/opioids for wound pain could profit from Ibuprofen foam treatment. In an ulcer population of 600.000 subjects (France) this roughly corresponds to 50.000 patients. Assuming that half use NSAIDs, approximately 250 GI-bleeds yearly could be avoided as well as the serious side effects attributable to opioids.

P 31

AN IN VITRO COMPARISON OF ANTIMICROBIAL ACTIVITY AND SILVER RELEASE FROM FOAM DRESSINGS

Christiane Buchholtz[1].

[1]*Research and Development, Coloplast A/S (Humlebaek, Denmark)*

Aim: Comparing the silver release characteristics of 4 commercially available foam dressings containing silver.

Methods: The silver release from the 4 foams was measured using a modified Franz diffusion method[1]. The amount of released silver (µg/cm^2) was measured using an AA Spectrophotometer.

The antimicrobial activity was tested using a Zone of Inhibition (ZOI) assay against the pathogens P. aeruginosa and S. aureus. Samples (Ø10 mm) were placed on an agar plate on a lawn of 105 cfu/ml, incubated 18-24 hours, 35-37°C. The clear zone around the samples was determined.

Results: Only 1 foam dressing displayed antimicrobial activity day 1-3 in the ZOI assay against both P. aeruginosa and S. Aureus, this same foam released the highest level of silver between 48 and 168 hours and provided a solid sustained silver release throughout a potential wear time of 7 days. The in vitro silver release of the foam with a soft silicone-layer was negligible (≤ 0.35 µg/cm^2 during a 4 hour period).

Conclusion: Silver must be released in order to be effective in the wound, and sustained silver release is an important characteristic of an ideal silver dressing[2]. The soft silicone-layer foam had no noteworthy release of silver and no antimicrobial activity suggesting that the silicone-layer may be encapsulating the foam keeping silver from reaching the wound.

References

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P 32

CLINICAL EFFICACY OF AN ALTERNATIVE FOAM-BASED NEGATIVE PRESSURE WOUND THERAPY SYSTEM*

John Cockwill[1], **Jenny Smith**[1], Trevor Mole[1].

[1]*Smith & Nephew Wound Management (St Petersburg, United States)*

Aim: A number of options for delivery of Negative Pressure Wound Therapy (NPWT) are now commercially available. There is a need for additional evidence demonstrating the clinical efficacy of these new products.

Method: A newly available polyurethane foam-based NPWT system* was used to treat 18 patients in a prospective, multicentre study with a variety of wound types. Mean patient age was 48.3 (range 25-72) years. Mean treatment duration was 14.6 days (5-29 days).

Results: 83% (15) wounds had progressed sufficiently leading to a change in treatment from NPWT. Reductions in wound dimensions between the onset and the end of therapy were calculated. Median reductions in wound area, depth and volume of 31, 46 and 74% respectively were observed. This equated to a weekly reduction of area, depth and volume of 13, 20 and 32% respectively. Exudate level was significantly reduced between the onset and the end of NPWT (p=0.013). The percentage cover of 'beefy' red granulation tissue in the wound bed was significantly increased (p<0.001) and non-viable tissue significantly reduced (p=0.008) between the onset and the end of NPWT. Significant reductions in wound odour (p=0.03) and generalised wound pain (p<0.001) were also measured.

Discussion: This data suggests that an alternative foam-based NPWT system* is able to address the common treatment goals associated with application of NPWT including reduction in wound dimensions, reduction in exudate levels and an improvement in the quality of the wound bed.

*reference not available

Devices and Intervention

P 33

BI-LAYERED CELL THERAPY IS IMPROVING THE SURGICAL MANAGEMENT OF MITTEN DEFORMITIES IN A PATIENT WITH RECESSIVE DYSTROPHIC EPIDERMOLYSIS BULLOSA

Jan Izakovic[1-2], **Reinhold Roesslein**[1-2].

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[2]*University Children's Hospital (Basel, Switzerland)*

Pseudosyndactyly, contractures and function loss due to cocooning of the hands are typical mutilating features of recessive dystrophic epidermolysis bullosa (RD-EB).

We report on a 27-year-old female patient suffering from this entity who previously underwent mitten release surgery on both hands in 2004. At that time, the resulting wounds were treated with standard anti-infective topicals and dressings. The protracted healing phase was marked by significant pain and bleeding.

Recently, surgery of the left hand had to be reperformed because of the reoccurrence of pseudosyndactyly and relevant function loss of the fingers. The procedure differed from the previous interventions by the use of a bi-layered tissue-engineered cell therapy[1] for immediate coverage of the denuded areas. This measure resulted in a reduction of time for re-epithelialization by more than two weeks and in diminished pain and bleeding as compared to the previous surgery.

For individuals with this kind of heavy constraints due to RD-EB the restoration of the functional integrity is paramount. Therefore, the aim of successful surgery is fast achievement of wound healing and skin stability, impairment of pain and bleeding and facilitation of physiotherapy. As reported previously and as currently confirmed by our own experience, tissue-engineered products can significantly contribute to achieve these goals.

[1]Apligraf®

Devices and Intervention

P 34

PILOT STUDY TO EVALUATE THE USE OF CONTINUOUS TOPICAL OXYGEN THERAPY IN THE TREATMENT OF CHRONIC WOUNDS

Kevin Woo[1,2], Gary Sibbald[1, 2], Patricia Coutts[2].

[1]*Women's College Hospital (Toronto, Canada)*
[2]*Toronto Regional Wound Clinics (Toronto, Canada)*

Aim: Oxygen has also been demonstrated to promote wound healing by enhancing energy production, collagen synthesis, neovascularization, and anti-microbial activity. The primary objective of this study is to evaluate the ability of continuous topical oxygen therapy to promote healing in chronic wounds.

Methods: In this pilot study, 9 patients with chronic ulcers in the lower extremities were treated with continuous topical oxygen therapy. Dressings were applied two to three times a week, for a period of up to four weeks. The wound size was measured weekly. Characteristics of the wounds indicating wound infection using the NERDS and STONEES checklist were recorded. The higher the NERDS and STONEES score the more characteristics are present suggesting wound infection. Semi-quantitative swabs were obtained at week 0 and 4.

Results: The mean surface area reduced from 12.03 cm^2 at baseline to 9.60 cm^2 at week 4. The difference in surface areas was significant ($t=3.04$, $df=8$, $p=0.016$). The NERDS and STONEES score was reduced from 5.3 to 2.7 ($t=3.8$, $df=8$, $p=0.027$) in the first 3 weeks of therapy indicating improvement in wound characteristics are that associated with infection.

Conclusion: Continuous topical oxygen therapy is an effective treatment modality for chronic wounds. This therapy promotes wound healing and reduces signs associated with bacterial burden.

P 35

USING THE IRRIGATION PORT ON FECAL MANAGEMENT SYSTEMS FOR MEDICATION INSTILLATION

Catherine Milne[1], Ann Durnal[2].

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Aim: Faecal management systems (FMSs) are used to assist to prevent pressure ulcers and dermatitis, avoid faecal wound contamination, and reduce transmission of infectious disease by environmental contamination with stool. These patients often have multiple comorbidities that precludes oral, gastric or nasogastric administration of medication that require intestinal mucosa for therapeutic results. Clinicians are often forced to remove the FMS for intrarectal administration of medications.

Methods: A retrospective review of 15 patients with a FMS* for wound management, pressure ulcer prevention or infectious disease control purposes who also required intrarectal medication to treat an underlying condition was performed. Medications with different viscosities and volumes were administered via the irrigation port with subsequent flushing of the dead space in the port and lumen to assure dose delivery to the intrarectal tissue.

Results: 42 doses of 4 different intrarectal medications and viscosities were instilled. Volumes ranged from 15 cc to 300 cc. All patients appeared to have achieved the intended therapeutic benefits of the medication (e.g. – lower potassium). There was no leakage of medication or stool around the device. The device remained in the rectum without expulsion.

Conclusion: The irrigation port on a FMS* can accommodate administration of medications with a range of viscosities and volumes without leakage or expulsion from the rectal vault and achieve the intended therapeutic intent of the medication. The FMS* objective to maintain skin integrity, prevent wound contamination or spread of infectious disease was not compromised.

*Flexi-Seal Signal™, Convatec, Skillman, New Jersey, USA

P 36

OPTIMIZING FAECAL CONTAINMENT USING INDIVIDUALIZED BALLOON VOLUMES

Catherine Milne[1], Ann Durnal[2], Mary Webb[3].

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Aim: Diarrhea induced faecal incontinence is a common patient care management issue associated with incontinence associated dermatitis (IAD), fungal overgrowth, cathter associated urinary tract infections and pressure ulcers. Faecal containment using internally placed faecal mangaement systems (FMSs) are frequently used to avoid these issues. As rectal lumen size and the number/position of Houston valves in the rectal vault vary between patients, the ability to individualize balloon volume may enhance faecal diversion and reduce leakage, expulsion and the potential for overfill.

Method: A new FMS* with a fill indicator was placed in 17 faecally incontinent patients with liquid/semi-liquid stool. The balloon was inflated and the device was maintained per manufacturer's instructions. Leakage and expulsion episodes were recorded.

Results: Balloon volumes ranged from 34-45ml. There were no episodes of balloon expulsion from the rectum. One patient had leakage around the catheter but this was markedly reduced when balloon volume was decreased to 37 ml. There were no occurrences of IAD. No other adverse events were noted.

Conclusion: Balloon volume range used in these patients suggests that individualization is recommended for safety and care management to reduce expulsion and leakage around the catheter. Limiting fluid instillation to 45 ml in the retention balloon has been shown to be safe to the rectal mucosa. Using a fill indicator to signal optimal FMS balloon volume in the rectal vault is a viable method to achieve these goals. More study is warranted.

*Flexi-Seal Signal™, ConvaTec, Inc., Skillman, New Jersey, USA

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INCONTINENCE-ASSOCIATED DERMATITIS PREVENTION AND TREATMENT – WHAT TO DO?

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1) Nurses and doctors are confronted daily to incontinence for many of their patients. Without a protocol well defined, they use various methods for prevention and treatment of Incontinence-Associated Dermatitis, often without success.

2) A protocol based on experience as experts have been developed and validated by a group of experts composed of multidisciplinary doctors, Wound specialized and enterostomial therapist nurses in Lausanne with the aim to introduce measures to prevent maceration by removing and reducing friction in urinary and/or fecal incontinence and restore a normal skin condition. Using proper care and pharmaceutical products help nurses to prevent skin break-down and therefore, provide good care to their patients. After looking at what was being done elsewhere in Europe and testing a variety of products that could be found on the market, the experts defined optimal attitudes and pharmaceutical products that should be used.

3) The protocol consists in two distinguished parts. First, the prevention attitudes to have when facing risks of Incontinence-Associated Dermatitis and the products that can be used. The other part of the protocol details the different attitudes and products used when facing skin break-down, superficial wounds and mycosis.

4) Like any other complex pathology, care givers need a clear, simple and well defined protocol to help them giving the best of care for their patients with Incontinence-Associated Dermatitis.

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WOUND MOISTURE CAN BE MEASURED WITHOUT DISTURBING THE DRESSING

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[2]*NHS Greater Glasgow & Clyde (Glasgow, United Kingdom)*

Aim: To demonstrate that a small, sterile sensor* placed on the wound surface during dressing application can indicate wound moisture status without disturbing the dressing.

Methods: A sterile moisture sensor was approved for clinical trial in Venous Leg Ulcer Patients. Patients were recruited to the trial at the beginning of their referral for treatment. Patients recruited to the trial were treated as per best practice by compression therapy. The trial purpose was to examine moisture status recorded by the sensor and compare this with observation and dressing change evidence. The sensor was placed over the wound and then secured in place with a compression bandaging system. Moisture was recorded daily by a research nurse using a hand-held meter. Dressings were changed on a weekly basis and photographs and clinical observation of the wounds were made. Each subject was asked at the end of the study to complete a questionnaire regarding the experience.

Results: A total of 15 patients were recruited to this study. It was demonstrated that the sensor accurately indicated moisture status within 5 bands of moisture, as indicated by the hand held meter, that are useful for clinical decision making. These bands are;

- Dry
- Dry to moist
- Moist
- Moist to wet
- Wet

Conclusions: The sensor was able to indicate the moisture status under the dressing and this corresponded to visual observation during treatment and at dressing change. Photographic evidence and measurements are presented with the results of the patient questionnaire.

*WoundSense™

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IMPROVING OUTCOMES IN THE MANAGEMENT OF GRADE 3 AND 4 PRESSURE ULCERS

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[3]*Talley Group LTD (Romsey, United Kingdom)*

Aim: Pressure ulcers are costly to manage, requiring high levels of nursing time, expensive pressure relieving/reducing equipment and a range of wound care products. The aim of this small pilot study was to observe whether by using Negative Pressure Wound Therapy (NPWT) rather than traditional dressings, the outcomes could be improved and the cost per patient could be reduced.

Method: Five patients who were referred to the Tissue Viability Service with Grade 3 and/or Grade 4 pressure ulcers (EPUAP grading) were treated with a NPWT device*. Data was collected on the cost and outcomes of treatment in comparison to standard practice (traditional wound care). This included wound progression, frequency of dressing changes (nursing time plus the cost of wound care products), cost of other equipment and incidence of complications.

All patients were treated in the community setting.

Result: The outcomes of the evaluation suggest that there was a reduction in the frequency of dressing changes, exudate was managed more effectively, and the wounds progressed when NPWT was implemented.

Conclusion: The outcomes of this small evaluation are positive and have implications for improving patient care and more effective use of resources in this patient group. There are plans to extend this study to a larger number of patients.

*Venturi (Talley Group LTD)

This evaluation was sponsored by Talley Group LTD (UK)

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USE OF OXIDISED REGENERATED CELLULOSE IN FACILITATING WOUND HEALING

Breda Cullen[1], Derek Silcock[1], Leyla Zilic[1], Steve Foster[1].

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Oxidised regenerated cellulose (ORC) has been used clinically for over 40 years. Clinical benefits include its bioresorbable properties as it readily degrades under physiological conditions through fluid absorption and subsequent gelling. In addition, as ORC degrades it lowers the pH of the surrounding environment due to the generation of glucuronic acid, which helps control bacterial growth.

Aim: To examine the benefits of ORC alone and in combination with collagen in wound healing assays.

Methods: The ability of these biomaterials to stimulate fibroblast cell growth was assessed in vitro using a metabolic proliferation assay (MTT). We also examined the ability of ORC to inactivate proteases, in particular elastase as it predominates in chronic wounds.

Results: Both ORC and the combination of collagen/ORC stimulate the growth of human dermal fibroblasts. In addition, in vitro studies show that collagen/ORC composites significantly reduce MMP and elastase activities. Results also show that ORC provides the effectiveness against elastase; an effect, which was confirmed in patients treated with collagen/ORC. In contrast, collagen-only containing dressings tested in vitro had only limited effectiveness against elastase activity. Finally, a greater antimicrobial effect was observed with collagen/ORC than with collagen alone, suggesting that it is the ORC component that is antimicrobial.

Conclusions: This study demonstrates that the ORC component of collagen/ORC dressings provides unique functionality that cannot be achieved through the use of collagen alone. The combination of collagen and ORC provides a favourable environment for wound healing.

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ULTRASONIC TRANSPORT OF DISSOLVED OXYGEN IN TISSUE USING SAW TECHNOLOGY

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Aim: A follow-up study using hyper-oxygenated saline and SAW (surface acoustic waveform) low frequency ultrasound technology substituted for a cymbal array flexural ultrasonic transducer utilized in a previous experiment was performed to measure transport of oxygen in tissue.

Methods: 5 cm by 5 cm wounds were created in the epidermis on the dorsum of anesthetized swine (n=3) lateral to the spine. Probes measuring dissolved oxygen by fluro-optical fibers were inserted 2-3 mm below the surface of the wound in the center and periwound area. Dressings fitted with hyperoxygenated drip solutions were affixed to the wounds and interstitial dissolved oxygen levels were documented. A transducer was affixed to wound sites atop the dressings and sonication was delivered at 90 kHz at 60mW/cm^2 with continuous drip of hyperoxygenated saline.

Results: Baseline dissolved oxygen levels did not significantly change with control drip of hyperoxygenated saline. PaO2 levels increased from 40 mm to 100+ mm Hg in wound tissue directly under the sonicator; increases from 20mm to 60 mm Hg in the periwound area 3 cm lateral to the transducer were noted with active sonication.

Conclusion: SAW ultrasound technology in conjunction with oxygenated solutions can predictably increase interstitial oxygen in and around a wound bed. It is noted that prior experiments with cymbal array transducers only registered increase in oxygen levels directly under the transducer array. Technique may be a refined method of treatment for hypoxic wounds.

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TIMELY INTERVENTION WITH NPWT EMERGING THOUGHTS ABOUT THE THERAPEUTIC WINDOW

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Aim: Clinicians do not always use NPWT to wound closure but often as a bridging technique, until alternative methods of wound management become more appropriate. The aim of this study was to identify the characteristics of NPWT-treated wounds which had progressed sufficiently to warrant a change in treatment by comparing with those which required further NPWT.

Methods: A prospective, non-comparative multi-center evaluation was carried out to assess the performance of gauze-based NPWT. Wounds which had ‘progressed sufficiently’ (Group A) were compared with those which ‘required further NPWT’ (Group B) at the end of the 30 day study period.

Results: Group A (n=67) showed a greater reduction in wound area and volume (44% and 85% respectively) than Group B (n=56) (21% and 55% respectively) compared to baseline. At the end of the study, 54% wounds in group A had no exudate compared with 11% in Group B. The percentage granulation tissue was similar for group A and B (90% and 92.5% respectively).

Conclusions: This data suggests that significant (>80%) reduction in volume and reduction in exudate levels towards low or none are most important in the decision to stop NPWT and switch onto less intensive therapies. Relatively modest reductions in area (44%) were observed in Group A suggesting that this was not as critical in the decision to stop NPWT. Furthermore, a high percentage of granulation tissue in the wound bed was not sufficient reason, on its own, to progress onto an alternative therapy.

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WITHDRAWN

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AM106: A SYNTHETIC CHONDROITIN SULPHATE WITH BENEFICIAL EFFECTS ON WOUND HEALING

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Aim: The extracellular matrix (ECM) of the dermis plays a crucial role during wound healing by forming the substrate upon which cells proliferate and migrate and by regulating the activities of secreted factors. Accordingly, agents that facilitate ECM formation might be used to improve healing of ulcers that suffer from ECM deficiency. AM106 is a synthetic chondroitin sulphate known to potently stimulate collagen fibril formation in vitro. The aim was to investigate whether treatment with AM106 had beneficial effects on healing in two different wound models.

Method: Full-thickness, excision wounds were made dorsally on healthy mice and the wound area reduction was followed over 11 days. Full-thickness incisions were made dorsally on diabetic mice, after which the wound edges were closed with surgical suture. After 14 days, the tensile strength of the healing tissue was assessed. AM106 was administered topically once daily.

Results: AM106 had a positive influence on wound area reduction and significantly accelerated healing of excision wounds in healthy mice. Wound half-closure time (CT50) was 5.9+/-0.3 days for animals treated with 0.1µg AM106 as compared to 7.0+/-0.2 days for vehicle-treated animals. Furthermore, AM106 increased wound breaking strength in diabetic mice. At 10µg, AM106 gave rise to an average increase in mechanical strength of 27%.

Conclusion: AM106 has potential as a novel wound healing agent. By facilitating the formation of collagen fibrils from endogenous collagen molecules, AM106 might accelerate healing and increase the strength of the regenerated tissue.

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IMPROVEMENT AND MODULATION OF SECONDARY INTENTION HEALING USING A BILAYERED LIVING CELL-BASED TREATMENT

Damien Bates[1], Katherine Giovino[1], David Hurley[1].

[1]*Organogenesis, Inc (Canton, United States)*

Aims: During early development of a bilayered living cell-based treatment* (BLC) the construct was expected to act as a skin graft substitute. Reviewing results across different randomized studies in light of the current understanding that BLC improves healing via secondary intention, rather than by primary intention, may help clarify discordant observations.

Methods: Data were systematically summarized from 9 open-label, randomized, controlled trials in which wounds were treated with BLC or an appropriate control. Information collected included patient demographics, baseline clinical characteristics, and rate and quality of healing.

Results: When a single application was applied to acute cutaneous wounds, BLC consistently healed wounds in a shorter period of time than control; however, this difference reached significance (P=0.03) in only 1 of 5 studies. In acute oral wounds, a single application of BLC was found to enhance the aesthetic qualities of regenerated oral mucosa (color and texture; P<0.001; Figure) compared with a palatal graft. In chronic wounds (venous leg ulcers, diabetic foot ulcers), where BLC was repeatedly applied on a weekly basis, depending on residual wound coverage, BLC significantly improved rate of healing compared with control dressings.

Conclusions: Across trials with different populations and indications, a consistent trend was seen in BLC enhancing the rate and quality of wound healing. Results obtained with acute cutaneous wounds may have been more robust had repeat BLC applications been used, as is consistent with our current understanding that BLC improves and modulates secondary intention healing.

*Apligraf®, Organogenesis, Inc. Canton, MA

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PERSISTENCE OF CELLS FROM BILAYERED LIVING CELL-BASED TREATMENT: SUMMARY OF OVER 15 YEARS OF EXPERIENCE

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[1]*Organogenesis, Inc (Canton, United States)*

Aim: During the early development of a bilayered cell-based therapy* (BLC) it was thought that the construct would behave similar to autografts, with cells persisting after the wound had healed. In the majority of studies, long term persistence of BLC cells have not been observed; however, persistence may occur in a small number of cases.

Methods: A systematic review was performed to identify BLC persistence data from published studies and unpublished data from the manufacturer. Cellular persistence was evaluated using HLA genomic identification methods or identification of the Y-chromosome from male cells used in BLC applied to female patients. Measures of cell viability were not performed.

Results: Biopsies have been obtained from 61 patients with various types of wounds (eg, burns, donor sites, venous leg ulcers, oral mucosa, epidermolysis bullosa). In the majority of patients, BLC cells are no longer detected beyond 4 weeks after application. There have been 4 cases of persistence occurring 6 weeks after application. In 2 of those cases, results varied according to the type of detection methodology employed. In the few cases where BLC cells have persisted beyond 4 weeks, underlying comorbidities that compromised the patient's immune system were present. The clinical progression of healing appears to be similar for wounds regardless of the presence or absence of BLC DNA.

Conclusions: In contrast to the "take" of tissue autografts, DNA from cells in BLC may persist in patients for up to 4 weeks and in most cases less.

*Apligraf®, Organogenesis, Inc. Canton, MA

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ELECTROSTIMULATION IN WOUND TREATMENT: CLINICAL EXPERIENCE

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[1]*St Luca's Clinic Difficul wound Healing Unit (Pecetto Torinese, Kazakhstan)*

Aim: evaluation of clinical result in treatment of chronic wounds with electrical stimulation

Methods: a series of 40 wounds with different etiology was enrolled to evaluate the activity of electrostimulation as an adjunctive treatment. Inclusion criteria was wound without reduction of the wound's area in the last 4 month. A treatment for ½ hour 2 time a day was performed for a period of 30 days. The wound's area was measured with a scan system from time 0, each week, until resolution or for the period of 60 day observation. We define the result as healed, Improved (area's reduction >40%), Stopped (area's reduction < 40%), Worsening (increased area).

Results: the global result was H=45%, I=22,5%, S=22,5, W=10%. The results according to etiology are presented in the table

Discussion: The result appeared influenced from the area's initial stage and from nerve system pathologies. The prevalent activity appears to enhance reepitelization

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THE IMPORTANCE OF OPTIMAL WOUND BED AND PATIENT PREPARATION FOR TOPICAL NEGATIVE PRESSURE* THERAPY

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Aim: Vacuum assisted closure methods for treatment of problem wounds have been used quite extensively in the last few years. However, the capabilities of vacuum assisted therapy have been overestimated in many circumstances. Most of the Topical Negative Pressure* therapy failures occur due to improper indications and not sufficient wound bed preparation.

Methods: Clinical cases of Topical Negative Pressure* therapy failures were analyzed in order to find the most common errors in treatment indications and wound bed preparation methods. General condition of the patients and co-morbidities should be taken into account as well.

Results: Most of the failures occurred in cases where the basic** principles of wound management together with the diagnosis and treatment of significant co-morbidities compromising the natural wound healing processes have not been recognized and appropriately corrected. Analyses of typical illustrative cases are presented.

Conclusions: Correct initial assessment and diagnosis not only of the wounds assigned for treatment, but also of the other concommitant pathologies of the patients are of utmost importance. Topical Negative Pressure* treatment itself can not replace appropriate wound management strategies and methods along with simultaneous treatment and/or correction of other diseases and pathologies. Standard wound management practices should be an integral part of the complex therapeutical approach.

*VAC

**such as TIME - EWMA 2007

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CLINICAL EVALUATION OF THE USE OF AN INNOVATIVE BIOACTIVE MEDICATION (SODIUM HYALURONATE, COLLOIDAL SILVER) IN "NON RESPONSIVE" CUTANEOUS ULCERS

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Sometimes, in clinical practice, we practitioners have to handle chronic lesions that fail to progress through the normal sequence of repair, although they are thoroughly assessed as concerns their causal factors (poor circulation, nutritional deficiencies, bacterial infection, etc.), and adequately approached.

Among the aspects characterizing the so-called "chronic loop", substances inhibiting growth factor migration and cell proliferation cumulate, until they reach a critical point, thus halting the healing process, specifically during the granulation phase.

The clinical and technological response can be the use of sodium hyaluronate, in combination with colloidal silver*, which interrupts the "chronic loop" and restores the proper conditions favouring the healing process.

Following a thorough analysis of the origin, evolution and resolution of the "chronic loop", the Author has brought forth evidence on the key role of a new combination of sodium hyaluronate and silver, in promoting the wound healing process, while maintaining a moist environment.

*Hyalosilver spray, Fidia farmaceutici S.p.A., Abano Terme (PD), Italy

Diabetic Foot

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VALUE OF A LIPIDO-COLLOID TECHNOLOGY MATRIX IMPREGNATED WITH NANO OLIGOSACCHARIDE FACTOR (METALLOPROTEINASE INHIBITOR) IN THE LOCAL TREATMENT OF FOOT WOUNDS IN DIABETIC PATIENTS

Maryline Candito[1], Aurélie Sansey[1], Lise Reilhes[2], Monique Goletto[2], Sandrine Zalateu[3], Fabienne Creach[3], **Serge Bohbot**[4], Anne Sauvadet[4].

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[4]*Laboratoires Urgo (Chenove, France)*

Aim: Foot wounds in diabetic patients are pathophysiologically characterised by an abnormally high local proteolytic activity due to release of excess of Matrix MetalloProteinases (MMPs).

These enzymes exert their lytic activity on the protein components of the extracellular matrix (native collagen, elastin, fibronectin), delaying tissue reconstruction. NOSF (Nano-OligoSaccharide Factor) is an innovative compound having demonstrated its Matrix MetalloProteinase-inhibiting properties.

Methods: Using clinical case studies, the authors report their first experiences with the use of the TLC-NOSF (Technology Lipido-Colloid with NOSF) matrix in the local management of grade 1A foot wounds in diabetic patients, combined with foot offloading. The wounds treated were followed up by the medical and paramedical team regularly for a period of 12 weeks (clinical, planimetric and photographic course).

Results: These clinical case studies demonstrate the good efficacy, good tolerance and high level of conformability of the TLC-NOSF matrix in the local treatment of these lesions.

Conclusions: For all the cases reported, the activity of this new compound leads to retrigger the healing process, followed up until complete healing of the lesions.

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A TRIO OF NEUROPATHIC FOOT ULCERS EFFECTIVELY MANAGED WITH A HYDROFIBRE GELLING FOAM DRESSING

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Aim: To illustrate the effective management of highly exuding wound and its harmful components on three challenging neuropathic foot ulcerations.

Method: Three patients with neuropathic foot ulcerations were selected. Two had Type 2 diabetes and had surgical debridement/amputation of the foot due to severe cellulitis, necrosis and osteomyelitis caused by trauma. The third had neuropathy due to nerve damage from previous hip replacement. This wound was a result of an animal bite.

The challenges of management were location, associated pressure relief, patient compliance, moderate/high levels of exudate and managing the bacterial burden.

All three wounds had severe peri-wound maceration which conventional foam dressings were unable to manage.

A hydrofibre gelling foam dressing was applied. Dressings were changed alternate days.

Results: All wounds progressed; exudate was effectively managed resulting in peri-wound maceration resolving in the first week of commencement. Patients found the dressing comfortable, conformed well to the foot and easy to apply.

Conclusion/Discussion: The foot can be anatomically difficult to dress as dressings are not designed for the repetitive forces, thanks to its gelling hydrofibre technology; exudate is absorbed and locked in, trapping harmful components of exudate creating an optimal moist wound environment that initiates healing. The gelling action locks in fluid, preventing it spreading laterally, retaining it, even under pressure. The dressing regime in conjunction with appropriate pressure relief and good glycaemic control effectively assisted progression towards healing.

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SUCCESFUL TREATMENT WITH COLLAGEN IN STAGNATED DIABETIC ULCERA

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Aim: Foot ulceration remains a major health problem for diabetic patients and has a major impact on the cost of diabetes treatment. Non-healing wounds represent a serious problem because degrading processes, like destruction of the extracellular matrix, prevent wound closure and also makes the wound vulnerable for infection. Our standard treatments for such wounds, such as debridement, wound care for diabetic foot ulcers, appropriate footwear, can still leave a significant population with non-healing wounds.

The purpose of this study was to demonstrate the effective and practical use of collagen dressings in diabetic ulcers to speed up the healing.

Methods: We reviewed the efficacy of the use of collagen in 20 patients suffering from diabetic ulcers in clinical en out-patient setting.

Results: The results are in very good line with the experience of the patients. The daily and social activities where improving. The wounds were in al casus responding. The collagen was easy to handle. The collagen absorbs exudates and forms a soft biodegradable gel, which rebalances the wound environment. The micro environment was successful rebalanced to promote the forming of granulation tissue and re-epithelialization.

Conclusion: In the daily practice the use of collagen is easy. Patients with an improved or healed ulcer are more motivated. The use of collagen improves clinical outcomes and increase comfort during treatment and at dressing changes. Collagen seems to be a convenient and effective product to improve non healing diabetic ulcers.

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COLLAGEN AND OXIDIZED REGENERATED CELLULOSE WITH SILVER: AN ECLECTIC WOUND DRESSING FOR DIABETIC FOOT ULCERS

Cristiana Di Campli[1], Maria Chiara Collina[1], Simona Di Carlo[1], Antonella Lapenna[1], Giovanni Federici[1], Daniela De Gaetano[1], Mirella Monica Dogaru[1], Fabrizia Toscanella[1].

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Over 100 known physiologic factors contribute to wound healing deficiencies in diabetic patients. These include decreased or impaired growth factor production and balance between the accumulation of extracellular matrix components and their remodeling by proteases.

The collagen+oxidized regenerated cellulose (ORC) and silver (*) is a wound dressing able to re-balance the wound environment by the unique combination of inactivation of proteases with protection of growth factors. The low level silver may reduce the bacterial growth.

We report our experience with this dressing in three main applications:

1. all the Texas I, II A/B ulcers, when the reepithelization process is ongoing, but the ulcer bed can be still quiescent;
2. under the negative pressure therapy in large dimension ulcers or open amputations.
3. after application of double-layer dermal substitute on open amputations, when the silicone layer is removed after 3-4 weeks. This is a real crucial phase when the healing process is ongoing, but an infection is still possible, expecially when an earlier removal of silicone layer is mandatory.

We will present a series of cases successfully treated with these approaches.

We conclude that this dressing has a wide range of applications in patients with diabetic foot ulcers, because of its peculiar features. Our positive experience underlines the possibility to further extend the use of this dressing in patients with diabetic foot ulcers.

(*) Promogran Prisma, Systagenix, UK

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ELECTRIC STIMULATION IN NOT-HEALING WOUNDS: A VALUABLE APPROACH FOR PAIN

Cristiana Di Campli[1], Maria Chiara Collina[1], Simona Di Carlo[1], Antonella Lapenna[1], Giovanni Federici[1], Daniela De Gaetano[1], Mirella Monica Dogaru[1], Fabrizia Toscanella[1].

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Novel effect of stochastic resonance and wound healing: a valuable therapeutic approach for pain

Background and Aim: endogenous electric fields are associated with wound healing. Application of these fields to intractable wounds is a new way to accelerate healing and control of pain. We aim to evaluate the role of stochastic resonance in pain relief and healing of non healing chronic wounds.

We employed an approved electrical stimulation device, which transmits a stochastic white noise to wounds as the basis for stochastic resonance.

Material and Methods: in order to evaluate the effect of stochastic resonance, we employed an approved electrical stimulation device, which transmits a stochastic white noise to wounds. 13 patients were enrolled with intractable chronic ulcers of different aetiologies, with no improvement even following standard and advanced wound care. Surgical debridement and wound dressing were performed following international standards. Healing rate, ulcer area, and pain according to VAS scale and side effects were evaluated.

Results: 2 patients dropped out (one for poor compliance; one for local allergic reaction in the site of electrode applications). A substantial improvement in pain relief was achieved in all patients starting from the first week of application. An accelerated healing rate was observed in 60% of cases.

Conclusions: we indicate that stochastic resonance may play a role in pain relief associated with wound healing. The treatment is efficient and comfortable. A study on larger number of patients is mandatory to better understand how the selection of patients should be performed.

(*)BST, Life Wave, Israel

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DIABETIC FOOT ULCERATION AND MMPS EXPRESSIONS

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The prevalence of diabetes mellitus increases with age in the Middle East and in particular in Saudi Arabia and as a result Diabetic Foot Ulcers (DFU) are a health problem and a common complication of diabetes in Saudi Arabia (El-Hazmi et al., 1998). However, many health professionals are not very well-informed about the effects of diabetes on Wound Healing.

In normal wound healing, tissue inhibitors of metalloproteinase (TIMPs) regulate matrix metalloproteases (MMPs) function. Formation of extracellular matrix (ECM) is controlled by balancing levels of MMPs&TIMPs. In (DFU) this mechanism is disrupted as DFU produce exudates that have high level of MMPs which damages ECM (Lobmann et al., 2002). Removal of this fluid by using advanced therapeutic approaches helps chronic wounds to optimize healing (Cullen et al., 2002).

Aim: This poster aims to explain how process of MMPs and TIMPs expression in chronic diabetic foot ulcers delays healing.

Method: A visual poster has been created by using graphics to simplify this complex physiological process and to suggest how new therapeutic modes of treating DFU might work.

Results: This poster has been used effectively within a large teaching hospital in Saudi Arabia. It helps health professionals to understand physiology of DFU and establish a new strategy for it.

Conclusion: Development of newly therapeutic approaches e.g.; proteases modulating matrix are helping to improve chronic wound healing by removing excessive wound fluid, reducing protease activity and reducing MMPs concentration at chronic wound surface including DFU.

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HOW TO DESIGN A RCT FOR EVIDENCE BASED INTERVENTION TO PREVENT DIABETES FOOT ULCERS

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Diabetes foot ulcers are expensive to society, and implicate great suffering for the individual patient.

Existing guidelines in ulcer prevention recommend targeted patient education. Evidence based methods with effect on ulceration rate have not been identified. Problem based pedagogy provides an opportunity for patients to find strategies to better manage specific chronic diseases.

Aim: To design a study to evaluate patient education for prevention of diabetes foot ulcers.

Method: A Randomized Controlled Trial was formulated according to CONSORT criteria. Ethical approval was sought and given.

Subjects: For a significant difference between the groups, 200 patients must be evaluated for two years with expected drop out rate of 12%.

Primary endpoint: Number of new ulcers during follow up time of 24 months.

Result: Inclusion: All healed patients 35-80 years old with diabetes, neuropathy and previous foot ulcer at a Diabetic Foot Centre. Signed Informed Consent.

Exclusion: Amputation, permanently in wheel chair, co morbidity with short expected survival.

Intervention: A: one - to – one standard education by registered nurse. B: problem based group session led by registered nurse. Both groups with podiatric care and individualized off loading.

Follow up after 6, 12, 18 and 24 months.

Conclusion: Designing this study was challenging due to the patients' severe health status. Currently 94 patients have been included in the study. The drop out rate due to deaths and co morbidity is stable.

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HYDROFIBRE DRESSINGS WITH SILVER* IN THE MANAGEMENT OF DIABETIC FOOT ULCERS

Jae Ha Hwang[1], Kwang Seog Kim[1], Sam Yong Lee[1].

[1]*Chonnam National University Hospital (Gwangju, Korea, Republic of)*

1) **Aim:** The objective of this study was to determine whether a hydrofibre dressing with silver* would afford quicker wound resolution as compared to iodine-moistened gauze in the management of diabetic foot ulcers.

2) **Methods:** Twenty patients were randomized into either the experimental hydrofibre dressing with silver* group or control iodine gauze group. Included in the study were diabetic patients who had bone and tendon exposure. All foot ulcers were surgically debrided prior to initiation of the hydrofibre dressing with silver* or gauze treatment. In the experimental group, the hydrofibre dressings with silver* were applied in accordance with manufacturer's protocol for chronic wounds and changed every 24 hours. In the control group, iodine gauze dressings were applied at the time of skin graft and changed three times a day thereafter.

3) **Results:** Satisfactory healing in the hydrofibre dressing with silver* group was achieved in 30.8 days, compared to 52.2 days in the control group. Hydrofibre dressing with silver* makes patients feel more comfortable and feel less pain.

4) **Conclusions:** Hydrofibre dressings with silver* were shown to be safe, effective and well tolerated in the management of diabetic foot ulcers.

*Aquacel Ag

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ADOPTING A BIOFILM BASED WOUND MANAGEMENT APPROACH TO A COMPLEX POST-OPERATIVE DIABETIC FOOT WOUND

Melanie Doxford[1].

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Aim: To manage infection and facilitate healing of a complex post-operative foot wound in a patient with diabetes, limb ischaemia and end stage renal failure.

Method: A 67 year old diabetic gentleman underwent a partial foot amputation following several episodes of infection. The resulting wound was treated with topical negative pressure therapy[1] and skin grafted at 12 days post-op. The patient presented to clinic one week later with an infected, necrotic skin graft. Chair side hydrosurgical debridement[2] was performed in order to remove all necrotic tissue. A surfactant cleanser and gel[3] was then implemented for daily use to further treat and prevent the establishment of chronic wound Biofilm and encourage the remaining islets of epithelium to migrate throughout the wound bed.

Results: At one week the wound bed remained clean and the remaining islets of epithelium had begun to expand. Continuous sharp and hydrosurgical debridement was performed as necessary during weekly clinic visits in conjunction with the daily use of a surfactant cleanser and gel. After 12 weeks the remaining islets of epithelium had significantly expanded and further episodes of infection had been avoided.

Conclusions: Positive outcomes can be achieved in the complex diabetic foot wound even in the presence of ischaemia and significant underlying co-morbidity. Continuous removal of non-viable tissue in conjunction with daily use of a surfactant cleanser can help reduce the development of Biofilm wound infection and aid healing.

[1] V.A.C. Therapy KCI Medical
[2] Versajet (Dolby Medical)
[3] Prontosan® (BBraun)

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PLATELET RICH FIBRIN SEEMS TO BE A SAFE AND EFFECTIVE TREAMENT IN DIABETIC PATIENTS WITH LOWER EXTREMITY FISTULAE

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Aim: Platelets are considered to play an important role in the healing process of bones and wounds, as they release growth factors upon activation following application onto the wound bed. Growth factors released from the activated platelets contribute to the repair of injured tissue through angiogenesis, synthesis of extracellular matrix components like collagen, granulation tissue formation, and re-epithelialisation. Platelet Rich Fibrin* concept was developed to provide a fully automated system for convenient preparation and efficient application of autologous platelet rich fibrin in wound treatment. A prospective, controlled European multicentre trial evaluating the effect of Platelet Rich Fibrin* in superficial diabetic foot ulcers is ongoing. The aim of this case series was to evaluate Platelet Rich Fibrin* treatment in consecutively included patients with diabetes mellitus and lower extremity deep fistulae.

Method: The system consists of 3 components; an automatic Processor Unit and an Applicator Unit and a single use kit providing the required consumables, including the unique application device** for application of Platelet Rich Fibrin*. 5-6 mL of Platelet Rich Fibrin* is prepared in less than 30 minutes from 120 mL blood drawn from the patient. The Platelet Rich Fibrin* is applied into the ulcer by the application device** and the ulcer is then covered by a non-absorbent dressing. Treatment is repeated every second week.

Results: Outcome of the three included patients is given in the table.

Conclusion: Platelet Rich Fibrin seems to be a safe and effective treatment in patients with diabetes mellitus and deep fistulae in the lower extremity. Further larger prospective controlled studies are needed.

Location	Duration	Depth	Osteomyelitis	#Treatments	Outcome
Post-amp knee	9 weeks	60 mm	Yes	4 treatments in 4 weeks	Healed 4 weeks after last treatment
Post-amp dig 2	5 months	24 mm	No	2 treatments in 4 weeks	Healed 4 weeks after last treatment
Forefoot	6 months	25 mm	Yes	5 treatments in 10 weeks	Healed 2 weeks after last treatment

*Vivostat PRF®, **Spraypen

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DIABETIC FOOT: A SPECIALIZED NURSE CONSULTATION

Veronique Urbaniak[1].

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1) **Purposes:**
Create a specialization site responding to the needs of patients and network medical providers.
Decrease the incidence of complications according to the declaration of St. Vincent.
Detect specific needs.
Create a link between different members of the multidisciplinary and extra hospital team.
Ensure adequate treatment in partnership and survey observation.
Diabetology specialized advice.

2) **Methods:**
Consultation by appointment Monday through Friday by request of the patient or a member of the multidisciplinary team.
Evaluation of needs and orientation to different treatment actors (angiologist, prosthetist, orthopedic or vascular surgeon, diabetologist, ergotherapist, etc.)
Therapeutic education
Coordination of different results and monitoring by a specialized nursed.

3) **Results:**
The multidisciplinary approach within the specialization site allows a reflexive treatment with a decrease in major amputations.
Therapeutic education encourages the patient to become the actor of their health. Daily prevention and quicker consultation, limiting severe complications.
Skills support for the network.

4) **Conclusion:**
A nurse consultation requiring expertise and humility; a multidisciplinary partner is indispensable, but the real challenge remains in the discharge, the first treatment in handling diabetic foot.

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DIABETIC WOUNDS AND NEGATIVE PRESSURE WOUND THERAPY (NPWT)

Sandrine Zalateu[1], Laure Di Meglio[1], Philippe Leger[1], Florence Branet[1].

[1]*Clinique Pasteur (Toulouse, France)*

1) Wounds are very common in diabetics. 7% of diabetics suffer or have suffered at least once in their life from a foot wound. 20 to 25% of diabetics seek medical attention at least once for a trophic problem.

For multiple reasons, diabetes slows down healing regardless of the location of the wound. Negative pressure wound therapy (NPWT) was proposed to facilitate the healing of wounds in diabetics.

2) We offer the analysis of 6 cases of trophic problems in diabetic patients in which we used NPWT.

3) The analysis on the indication of the NPWT, the healing duration, the devices of NPWT placement, treatments associated with NPWT to obtain healing (diabetes monitoring, antibiotherapy, discharge). The wounds chosen were two cases of post-amputation wounds (toe and transmetatarsal), a wound on the heel, a post surgical scarpa wound and mediastinitis.

4) The conclusions of this work confirm the importance of associating NPWT with a classical treatment of wounds in diabetic patients, particularly diabetes monitoring and discharge when it is indicated.

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CONTROLLED NEGATIVE PRESSURE IN THE TREATMENT OF DIABETIC FOOT – CLINICAL EVALUATION OF A NEW DEVICE

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[2]*Operative Unit of Long-term-Care, USSL 2 (Feltre (BL), Italy)*
[3]*Center for Diagnosis and Therapy of vascular ulcers, Casa di Cura “Villa Fiorita” (Prato, Italy)*
[4]*Center for Diagnosis and Therapy of vascular ulcers, Casa di Cura “San Camillo” (Versilia-Righi, Viareggio, Italy)*
[5]*Operative Unit of Vascular Surgery, A.O. “G. Salvini” (Garbagnate Milanese, Italy)*
[6]*Specialist CNP Lohmann & Rauscher (., Italy)*

Aim: Management of diabetic foot indicate in the surgical drainage and in antibiotic therapy the most important step of treatment to avoid septic complications. Adjunctive therapy, topical negative pressure, was proposed to control exudate and bacterial growth.

Previous clinical experiences have shown the use of foam was not well accepted by patients cause of pain and by operators founded in complex dressing technique.

Therefore we evaluated a new topical negative pressure device* with gauze to examine the different dressing techniques and technical devices.

Methods: From April to September 2009 the centers selected 5 patients (4male, 1female, average age 60,4 years) affected by diabetic lesions with different exudation levels. A measuring was performed at the beginning, during and at the end of treatment. A biopsy was taken to choose the appropriate antibiotic (s). If necessary, we accomplished a surgical debridement. At the beginning, in every case a continuous negative pressure was applied. In 2 cases after 15 days the treatment was changed into an intermittent negative pressure.

Results: In all cases the infection could be handled (in combination with systemic antibiosis) and the bacterial burden was reduced effectively. The handling of gauze in topical negative pressure was excellent. Small up to large-sized ulcers could be easily treated for the operators and without any pain for the patients.

Discussion/Conclusion: Application of topical negative pressure with gauze* in diabetic foot seems to overcome the handling-difficulties and allows a minor operating pressure. It was also possible to use this device in large-sized ulcers in which mild or severe infection was present. It seems to be helpful in infection control that the gauze is endowed with the antiseptic PHMB.

* = Suprasorb® CNP

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A WARD-BASED IN-PRACTICE EVALUATION OF A FILM AND PAD POST OPERATIVE DRESSING

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[2]*Gloucestershire Hospitals NHS Foundation Trust (Cheltenham, United Kingdom)*

Aim: In October 2008 NICE released a recommendation pertaining to care of post surgical wounds (National Institute for Clinical Excellence - Guidelines for the reduction in Surgical Site Infections: Oct 2008)

The Tissue Viability Team decided to evaluate the performance of a film and pad dressing, In order to ensure that the proposed dressing met the needs of patients and practitioner, a combination of practitioner-related practicality measures and patient-centred parameters such as acceptability and comfort was evaluated.

Method: At each dressing change, the performance of the dressing was assessed using a form developed by the evaluation team. Performance criteria were evaluated, including:

- ease of use (application/removal of the dressing)
- adhesion to the patient's skin
- dressing durability
- absorbancy
- conformability
- dressing wear time (qualitative)
- patient comfort
- overall performance of the dressing.

In addition to these criteria, the wear time of the dressing was ascertained by asking the assessing clinician how long the dressing being removed had been in place.

39 dressing changes were assessed between 27 January and 26 March 2009.

Results: Overall dressing performance was rated as better than current regimes used by 88% of staff and dressing wear time had improved daily to 3.84 days resulting in cost savings. 94% of staff said they would recommend the product.

Discussion: One of the aspects of providing high quality care is the priniciple of recognising and implementing good practice through national guidance (Darzi, 2008)

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ANALYSIS OF PRESSURE REDUCTION CAPACITY OF HYDROCELLULAR DRESSINGS APPLIED ON HEELS AND FOREFOOT

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[1]*Instituto de Biomecánica de Valencia (Valencia, Spain)*
[2]*Smith&Nephew (Barcelona, Spain)*

Aims: The study of plantar pressure distribution allows detecting possible overpressure in areas of the foot that could cause discomfort or even injury. The use of some hydrocellular dressings is a possible measure for proper managing of pressure to prevent and treat pressure sores. The aim of the study is to analyze the pressure reduction capacity of hydrocellular dressings.

Materials: An experimental study was designed to calculate the pressure level with and without the use of some hydrocellular dressings: hydrocellular dressing with soft gel adhesive and hydrocellular dressing with silicone adhesive in the forefoot, and a hydrocellular dressing with silicone adhesive specific for heels in the heels of five healthy volunteers. The measurements were performed with bare feet and with different dressings controlling gait speed to achieve uniform cadences. A system of instrumented insoles* was used to determine pressure in the forefoot and heel.

Results: Hydrocellular dressing with silicone adhesive specific for heels reduced 45% the average pressure and 42% the maximum pressure ($p < 0.05$). Hydrocellular dressing with soft gel adhesive and hydrocellular dressing with silicone adhesive reduced 27% the average pressure and 23%-25% maximum pressures ($p < 0.05$)

Discussion: Although our study has some limitations, such as the valuation based on healthy volunteers and walking with bare feet, we can establish that the hydrocellular dressings studied, had a local lowering effect of pressure on the foot during the gait cycle and can be an adjunctive measure in the prevention and treatment of PU.

* Biofoot/IBV V6.0.

Dressings

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AN OPEN LABEL NON COMPARATIVE STUDY ON THE EFFECT OF AN ALGINOGEL ON WOUNDS TREATED IN AN ARMY MILITARY HOSPITAL

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[1]*Army Military Hospital, Wound Care Unit (Rome, Italy)*
[2]*Flen Pharma Nv, Research Department (Kontich, Belgium)*

Aim: The aim of the study was to evaluate the safety and performance of an alginogel in subjects with chronic or acute wounds left to heal by secondary intention.

Methods: This single-centre, single-arm study was conducted at an Army Military Hospital, where twenty three patients with wounds of diverse etiology were treated with the dressing. The alginogel was applied depending on the specifications provided by the supplier and wounds were secured by secondary bandages. Patients had intermittent follow ups and treatment lasted up to 2 months or until healing.

Results: Mean baseline dimensions for the wounds were 2.56 cm^2 and 2.76 cm^3. Mean wound age before start of treatment was 728 days and 61% of wounds healed after two months treatment with the dressing. Secondary parameters such as granulation, epithelial, fibrin and necrosis coverage of wounds, edema and rubor were significantly reduced at each intermittent consultation in the study. After two months, a pronounced decrease in surface and volume of wounds was found ($p<0.001$). Significant reduction in pain before dressing changes was also recorded. Two adverse events were reported, one with an allergic skin surrounding and the other with transient maceration.

Conclusions: The alginogel dressing demonstrated excellent healing and good safety results. Additional studies are however warranted to confirm the clinical utility of the dressings in the management of chronic or acute wounds left to heal by secondary intention.

Dressings

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COMPOSITE HYDROGEL AND THERAPY RESISTANT ULCERS

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[2]*Infermiera - Ospedale S.Agostino Serv. Vulnologia (Avigliana (To), Italy)*

Aim: Clinical safety and efficacy of a new Bio-active wound dressing. This current study focusses on the use of a newly introduced, second generation hydrogel.

Methods and Materials: 15 patients were admitted to our hospital and treated with a new composite hidrogel based on pro-ionic wound care technology. The type of ulcers include post traumatic lesions, venous ulcers, diabetic ulcers and pressure wounds. We use a standard clinical observation window of 6 weeks in all patients. Dressing were changed every 4 or 7 days (depending on exudate).

Results: There were, in all cases, an elevated healing rate with better quality of life and pain reduction.

Conclusion: Meta-analysis by Jones (2006) suggest there exists non single prioduct suitable for all wounds throughout all stages of healing. Several products have extended use or have a broader application in hard to heal wounds. The newly introduced second generation hydroge has good clinical performance, increase quality of life whilst the extended wear time improves cost -effectiveness

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AN IN-VITRO STUDY SHOWING HOW A SECONDARY DRESSING CAN IMPACT THE MVTR OF A WOUND

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[1]*ConvaTec (Deeside, United Kingdom)*

Aim: To investigate the effect that high and low moisture vapour transmission rate (MVTR) secondary dressings have on the hydration of primary wound contact dressings. The secondary dressings tested were a foam and a carboxymethylcellulose (CMC) based cover dressing. The primary dressings were a gauze and a CMC based dressing.

Methods: Standard Payne/Paddington cups were assembled by placing a primary dressing hydrated with sodium/ calcium chloride solution B.P. onto the wound contact layer of a secondary dressing (fig 1).

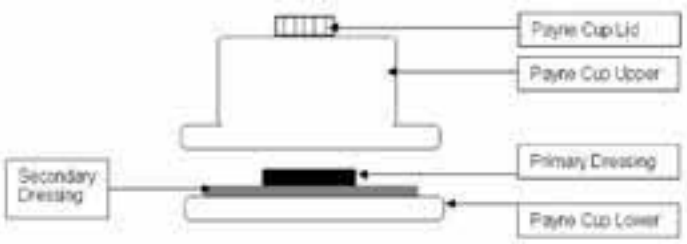

Figure 1 Diagram of Experimental Setup

MVTR of the secondary dressing and weight of the Payne cup assembly were recorded initially, after 1hour, 24hours and 48hours.

Results: Foam based dressings showed high MVTR after 1 hour but no MVTR at all after 24 hours, CMC based samples showed a steady increase in MVTR over the 48hour period.

Foam based secondary dressings decreased in weight initially and continued to decrease until 24hours, after which, the weight remained constant. CMC based samples decreased in weight more steadily over the period.

Conclusion: Moisture is rapidly lost through the high MVTR foam based secondary dressings within 24hours, after this time the dressings have no MVTR indicating that the primary dressing has completely dehydrated, which, in a clinical situation may cause wound bed desiccation and adherence of the primary dressing to the wound bed. The controlled MVTR CMC based secondary dressings manage primary dressing hydration over the 48 hour test period and hence, in a clinical setting would maintain a moist wound healing environment.

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THE PHYSICO-CHEMICAL PROPERTIES OF SILVER CONTAINING BURN DRESSINGS

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[1]*ConvaTec (Deeside, United Kingdom)*

Aim: Silver containing dressings vary in their clinical performance due to differences in the physico-chemical properties of the dressing. This comparative in vitro study assessed the overall physico-chemical characteristics of eight silver containing burn dressings.

Methods: The dressings were tested for percentage fluid retained under compression load, intimate contact with simulated wound fluid, lateral fluid spread, silver content and dissolution availability of silver into physiological saline.

Results: The results show marked differences in fluid handling properties, lateral fluid spread and the ability of the dressing to contour to uneven wound surfaces. Similarly, marked differences were also shown for silver content and rates of silver availability.

Conclusions: These results indicate that the new silver-containing carboxymethylcellulose burn dressing has shown good overall exudate management properties, as well as providing excellent contouring to uneven wound surfaces. An understanding of the overall physico-chemical properties of a wound dressing is an important aspect of choosing the appropriate dressing to ensure a successful outcome in the management of wounds which are infected or at risk of infection. These characteristics are likely to decrease the opportunity for bacterial proliferation in the wound and therefore should help to reduce the risk of clinical infection.

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RANDOMIZED STUDY TO EVALUATE THE REDUCTION IN SKIN DAMAGE CAUSED BY ADHESIVE DRESSING BY USE OF NOVEL SKIN PROTECTION FILMS

Andrew Hoggarth[1], Peter Walker[1], Craig Hardy[1].

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Repeated application of adhesive dressings to wounds and stoma can result in damage to the stratum corneum (SC) and epidermis surrounding the wound. Damage to the peri wound area can prolong the healing process. This is not only distressing for the patient but may also results in an increase in treatment time and cost.

A novel aqueous based polyurethane liquid (RxA)and a silicone solvent based silicone (RxB), which when applied to the skin form breathable, waterproof filmic barriers, were evaluated for their ability to reduce redness and SC damage in a twelve patient randomized study over a period of five days.

The condition of the skin was evaluated using Expert Grader assessment of erythema (EGE), instrumental measurements for TransEpidermal Water Loss (TWEL), and skin surface redness (Chromameter). Patient self assessed stinging and discomfort.

Statistical evaluation of the results for indicated that daily pre-treatment with RxA resulted in less apparent damage than daily pre-treatment with RxB or no pre-treatment

Patient self assessment showed no significant differences between the use of Rx A and RxB.

Based on the results of this study it can be concluded that the use of a skin protection film is beneficial in reducing potential damage to the stratum corneum cause by repeated adhesive application and stripping. Daily pre-treatment of Rx A was found to be more beneficial than daily pre-treatment with RxB in lessening the extent of SC disruption associated with repeated trauma and removal of adhesive devices.

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ANTIBACTERIAL CONTACT LAYER WITH TECHNOLOGY LIPIDO-COLLOID AND LIGHT ABSORBENCY – A WAY FORWARD IN PAEDIATRIC BURN CARE

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[2]*Laboratoires Urgo (Shepshed, United Kingdom)*

Aim: Many advances have been made in the management of burn injury in the past decade. Improvement of the wound healing environment with the use of silver release dressings has greatly improved healing of partial thickness thermal injuries.

Methods: A 6 year old child was admitted with a 12x3 friction burn/de-gloving injury to the lateral aspect of his right foot.

The decision was made to initially treat the injury with the antibacterial contact layer with Lipido-Colloid Technology (TLC), and light absorbency with a view to possible skin graft. Challenges in wound management for this case included patient compliance and comfort, exudate management, location of the wound, reduction of the frequency of dressing changes.

Results: This antibacterial contact layer with TLC and light absorbency was less traumatic for child at dressing changes. The smaller dressing maintained function and mobility. The dressing was also found easy to apply by the nurses. In a busy paediatric dressing clinic where time is often limited but the need to support children and their families is great, the simple application proved beneficial for all.

The child was discharged from the ward after 5 days and subsequent dressing changes were easily managed as an out-patient. After 5 weeks the wound was fully healed without skin graft requirement.

Conclusions: The goal of paediatric burn therapy is to prevent infection, limit pain, promote healing and minimise disability. This dressing achieves this.

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CLINICAL EVALUATION OF A NOVEL SILVER DRESSING*

Jan Vandeputte[1].

[1]*CNCI bvba (Varsenare, Belgium)*

Introduction: This silver coated nylon substrate is applied directly to the wound. This dressing has been sold in the USA for 9 years. Silver is a potent antimicrobial agent, that when used in open wounds must be used with caution.

Aim: Evaluate the clinical benefits of this new silver nylon dressing in respect to its ion release, toxicity potential & clinical outcome.

Methods: Literature study according to Medical Device Directive (93/42/EEC) Annex X and Meddev 2.7.1

Results: Unlike impregnated dressings, this silver dressing releases ions directly into the wound, at a minimum initial rate of 8 µg/ml to a self limiting maximum of 63 µg/ml after 8 days. We know a minimum of 5µg/ml is needed for antimicrobial action, and toxic levels of silver can occur over 157µg/ml. The clinical outcome for this silver dressing is especially promising in infected surgical wounds (reduction during cardiac surgery from 2.4% to 1.25%, and in orthopaedic surgery from 10.9% to 0). The healing rate in venous ulcers is also documented, but more work needs to be done. Importantly, the clinical data also suggests unique efficacy and cost effective healing when used with negative pressure therapy.

Conclusion: Together these data provided a persuasive body of evidence which suggests that the use of this unique silver nylon dressing can favourably impact the prevention and control of infection and the promotion of wound healing.

* Silverlon® (Argentum Medical LLC, USA)

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A NEW SURGICAL DRESSING RANGE

Bryony Lee[1], Bishop Steve[1], Pritchard Dave[1], Jones Lewis[1], Greenaway Simon[1].

[1]*ConvaTec Inc. (Deeside, United Kingdom)*

Aim: A modern wound dressing technology* has been shown to be clinically more effective than an adhesive dressing regimen following hip and knee arthroplasty. The combination of technologies used has been further developed to produce a new range of high performance surgical dressings. The new surgical dressing range has been designed specifically for use on surgical wounds, where longer dressing wear times are beneficial and maximising mobility over joints is important.

Methods: In vitro testing has been completed on the new surgical dressing range, other commercially available surgical dressings and the material combinations used in the jubilee method. The testing regime included the investigation of properties such as absorption/ retention, fluid handling capacity, flexibility (both dry and hydrated), intimate contact and an *in vitro* non traumatic bioadhesion study.

Results: Test results show that the new surgical dressing range provides increased retention/ absorption capacity, and extensibility in both dry and hydrated states when compared to other commercially available surgical dressings. Intimate contact with a simulated incision was successfully demonstrated for the new surgical dressing and the gelled dressing structure was shown to maintain a moist wound healing environment.

Conclusions: The *in vitro* test data highlights the key performance parameters of the new surgical dressing range, which is designed for use on surgical incisions such as total knee and total hip arthroplasty where maximising joint mobility is critical. The properties of the new surgical dressings also lend themselves well to use on other sites/ surgical wounds.

* The Jubilee Method for surgical wounds

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DONOR SITES: DO WE TREAT A UNIFORM WOUND IN A UNIFORM MANNER?

Anne Eskes[1], Louise Gerbens[1], Hester Vermeulen[1], Dirk Ubbink[1].

[1]*Academic Medical Center, University of Amsterdam (Amsterdam, Netherlands)*

Aim: Donor sites after split-skin grafting (SSG) are considered quite standardised wounds. However, the treatment of these wounds appears not to be uniform. We investigated current treatment policies for donor sites among medical centres in the Netherlands, to assess extent of treatment variation and most common local treatment options presently in use.

Methods: A questionnaire was sent out by e-mail to all Dutch medical centres with a surgical department. This questionnaire comprised two questions; a) “Do you have a donor site treatment protocol?” and b) “Which dressings are being used?”. To ensure a sufficient response rate, all centres were also contacted by telephone. We categorised the recommendations as stated in the protocols and the dressing types into generic groups.

Results: Eighty-five centres were contacted and 78 eventually responded (92%). Thirty-one percent of these stated to have a protocol. In total, 23 different dressing types were reported. The five mostly used dressing groups were films (44/78 centres; 56%), alginates (36/78; 46%), hydrofibres (24/78; 31%), silicone dressings (21/78; 27%), and paraffin gauzes (19%). As primary dressing alginates were mostly used (46%). Films were the most popular secondary dressing (24%), covering a wide range of primary dressings.

Conclusions: Based on this national survey, a large variation was found regarding the dressing materials currently in use to cover donor sites of SSGs. These findings call for an evidence-based guideline on treatment of donor sites upon which each centre can ground their local protocol.

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TREATMENT OF CHRONIC INFECTED WOUNDS WITH POLYMERIC MEMBRANE DRESSINGS

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[1]*University Medical Center Ljubljana (Ljubljana, Slovenia)*

Aim: The chronic wounds of 17 patients were re-dressed 2-3 times weekly, using polymeric membrane dressing*. Due to the cleansing ability of the dressing the need for wound cleansing was reduced, eliminating the disruption of the healthy tissue in the wound bed. Dressing’s matrix contains 4 active ingredients: cleansing agent, moisturizer, absorbing agent and silver. It is covered with thin, semi-permeable, transparent polyurethane film.

Methods: The patients were older than 60 and had various types of chronic wounds (diabetic ulcers, pressure ulcers, infected surgical wounds). The documentation included data on patients, their illnesses, wound description and assessment with respect to the healing stage, assessment of the wound surroundings, microbiological findings (protogenic bacteria and antibiogram), pain assessment (VAS), soaking of the dressing, calculation of wound area, and photo documentation. Patients satisfaction was assessed from 1-5.

Results: After a repeated use of polymeric membrane dressing the wound healing process improved and previously infected wound with significant secretion changed into a wound without signs of infection. The surroundings of the wound did not show signs of pathological changes, such as maceration or skin redness. Polymeric membrane dressing has proven its excellent absorption ability and maintenance of wound moisture, while silver ions reduced the amount of bacteria in wounds.

Discussion: The use of the dressing is suitable for wounds with significant secretion that require moist environment and in combination with the silver also for the infected wounds. Due to its positive characteristics polymeric membrane dressing provides patients with psychophysical satisfaction.

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MANAGEMENT OF SPLIT-SKIN DONOR SITES WITH SYNTHETIC WOUND DRESSINGS: A COMPARATIVE CLINICAL STUDY

Stephan Schreml[1], Peter Markl[2], Lukas Prantl[2], Michael Landthaler[1], Hardy Schwarze[2], Philipp Babilas[1].

[1]*University Hospital Regensburg, Dermatology (Regensburg, Germany)*
[2]*University Hospital Regensburg, Plastic and Reconstructive Surgery (Regensburg, Germany)*

Aim: This prospective, randomized, single-blinded, clinical study aimed at evaluating three different synthetic wound dressings for treating split-thickness skin graft donor sites.

Methods: 77 patients were randomly assigned to three study groups*. Wounds were inspected daily until complete re-epithelization. Ease of care, treatment costs, and scar development after a six months follow-up were evaluated.

Results: The synthetic skin substitute** showed significant ($p \leq 0.001$) pain reduction after 24 hours but increasing pain scores on the 5th day of treatment. The foam dressing with ibuprofen*** showed significant pain relief immediately after application and during the entire treatment period ($p < 0.05$). The soft silicone foam**** did not show any significant pain reduction. No differences were seen with regard to healing time, quality of re-epithelization, and scar development. The foam dressing with ibuprofen*** had the lowest overall treatment costs ($p \leq 0.001$).

Conclusions: The investigated materials did not differ with regard to quality and acceleration of the healing process, but the foam dressing with ibuprofen*** seems to be the most appropriate dressing material in terms of costeffectiveness.

* Suprathel®, Biatain-Ibu®, and Mepitel®, ** Suprathel®, *** Biatain-Ibu®, **** Mepitel®

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APPLICATION OF NASCENT OXYGEN RELEASING WOUND RINSING SOLUTION AND WOUND GEL ON LEG ULCERS

Kurt Kaehn[1], Ansgar Möller[2].

[1]*K2 Hygiene-Dienstleistungen (Aschaffenburg, Germany)*
[2]*Städtische Kliniken Bielefeld, Wundmanagement (Bielefeld, Germany)*

Aim: To evaluate the safety and performance of new nascent oxygen releasing wound rinsing solution and wound gel in a group of unselected patients.

Methods: Wound treatment in the Central Wound Management in our municipal hospital (>900 beds) is focused on the concept of wound bed preparation (Falanga and Sibbald). Wounds are routinely moistened and cleansed using a Betaine and PHMB containing wound rinsing solution at every change of dressing. After cleansing wounds are filled with a Betaine and PHMB containing wound gel. In cases of increased exudate levels the gel is replaced by hydrofiber or hydrocolloid dressings. In a group of 15 unselected patients with leg ulcers (diabetic and arterial decease) our standard products were replaced by new nascent oxygen releasing products1 during 4 weeks.

Results: In all cases wound size and depth was reduced during treatment using the new wound products. Slough was effectively removed by gentle and thorough rinsing. Neither local skin macerations, nor wound infections were observed in any of the cases. The nascent oxygen releasing products were well tolerated by the patients, painless in 14/15 cases and compatible with the applied wound dressings. Wound odour was improved in most cases. In no case treatment has to be discontinued.

Conclusion: In this first application of new nascent oxygen releasing wound products atraumatic cleansing of leg ulcers without any severe adverse reaction was demonstrated. In routine use the effectiveness of nascent oxygen releasing products may be comparable to Betaine and PHMB containing wound products.

[1] Prontosol®

Dressings

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CLINICAL EXPERIENCES OF USING A SUPER ABSORBING DRESSING

Frans Meuleneire[1].

[1]*AZ St-Elisabeth - Woundcare Centre (Zottegem, Belgium)*

Aim: High levels of exudates are often the reason of stagnating and exacerbating wounds. In this case study, we want to evaluate the use of super absorbing dressing, based on cellulose and super polymers with a cover of polypropylene*.

Methods: Ninety-two patients (acute: traumatic-, post operative wounds and chronic wounds: pressure ulcers and venous leg ulcers) has been assessed and evaluated weekly. All these wounds where medium till high exuding and where not progressing towards a positive woundhealing.

At time of removing the dressing, we observed the absorbing efficiency and the condition of the surrounding skin. Furthermore, we evaluated the wearing comfort. We also evaluated the effect on the granulation and epithelialisation process.

Results: Throughout the treatment period, we observed in almost all the wounds very satisfying absorbing capacities which lead towards an ideal woundhealing environment. We observed a reduction of wound oedema and hypergranulation. Despite the high exudates, we did not observe any leakage on the surrounding skin. No problems of maceration or irritation have been reported. During the application and wearing time, the patients did not complain about higher pain levels.

Conclusions: Management of wound exudates is a key factor in the woundhealing process. Due to the vertical absorption the dressing prevents stagnation in woundhealing and excoriation in the surrounding skin. Due to the non-adherent contact layer, this dressing did not stick into the wound surface.

Randomised studies will be necessary to objectivate these results and experiences.

* DryMax®Dressing EXTRA

Dressings

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EVALUATION OF A NEW FOAM DRESSING FOR LOW AND MIDDLE EXUDING WOUNDS

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[1]*Home Care (Knesselare, Belgium)*
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Aim: The choice of wound dressings is an issue of major importance to achieve a good wound management. This poster presents a clinical evaluation of a new foam dressing technology* in treatment of low to middle exuding, acute and chronic superficial wounds.

Methods: This descriptive and evaluative study is based on case studies of 10 superficial wounds. After cleansing the wound with sterile saline, weekly assessments were carried out and the dressing was photographed before removal of the dressing and before application of the new dressing. Our comments concern ease of handling, wear time, absorbency, patient perception of dressing change (pain), state of periwound skin and ease of removal of the dressings. The photo material illustrates the effect of the new foam dressing.

Results: The dressing had a good absorption capacity and was very comfortable for the patient. Applying and removing the dressing was uncomplicated. Periwound skin quality was excellent and there was no trauma when we removed the dressing. We did not observe any severe maceration in the case studies.

Conclusion: The new foam dressing for superficial wounds provides a rapid absorption and a high retention of exudate in the foam. The global evaluation was very positive because this dressing scored high on several observational points. Randomised studies will be necessary to objectivate these results and experiences.

* Hydrotac®

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CLINICAL EVALUATION OF A NEW HYDROGEL IN LOCAL WOUND TREATMENT

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[1]*Home Care (Knesselare, Belgium)*
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Introduction: Hydrogels remain popular products because of their effectiveness and ease of application. However, there is no clinical evidence as to why a certain hydrogel is better or more active than another. Because it is dispensed in a pressurised canister* has a greater convenience of use than other hydrogels. In addition, the product is free of paraben preservatives.

Methods: In a 3 month observational clinical study, 15 patients with different wounds, suitable for treatment with a hydrogel were selected to be treated with the new hydrogel.

The purpose of the treatment was mostly helping the debridement of necrotic tissue and/or fibrinous material. In dry wounds an additional purpose was keeping a moderately moist wound healing environment.

Photographs were made with the patients' consent at the beginning of the treatment and as many as possible during the following visits.

Results: The new hydrogel has a positive effect on the wound cleaning phase. It allows sufficient hydration of a dry necrotic wound, which enhances autolytic debridement and leads to a vital granulating wound bed.

Changing bandages is less painful because the gel does not stick to the wound bed. Ideally the product could have a higher viscosity allowing a longer contact time.

Conclusion: The new hydrogel distinguishes itself from other hydrogels by its convenient application and its lack of parabens. The opaque, white color helps to visually control the application and dosing, e.g. in filling up a cavernous wound exactly to the skin level.

* Flamozil® (Oystershell NV)

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EXPERIENCES OF A COMBINATION OF A SILICONE WOUND CONTACT LAYER WITH TOPICAL NEGATIVE PRESSURE

Frans Meuleneire[1].

[1]*AZ St Elisabeth - Woundcare Centre (Zottegem, Belgium)*

Goal: Topical Negative Pressure (TNP) is an innovative treatment for various types of complex or problematic wounds. Often we observe a firm adhesion of the foam dressing onto the wound surface. This is a major problem in frail granulation tissue of wounds that are treated with TNP. The use of an interface can avoid such problem.

Method: We assessed the wounds after use of the combination of an interface wound contact layer with TNP treatment in 7 cases. Dressing changes was performed every 3 to 4 days. We evaluated the efficacy, trauma at dressing change, transfer of exudate through the silicone wound contact layer and pain at dressing removal. The results have been illustrated by photo documentation.

Results: We did not notice any negative consequence in all the cases that were evaluated. At time of dressing change, the wound had a vital aspect. We did not observe any problem of adherence on the granulation tissue. Further more it was possible to change the dressings without use of painkillers.

Conclusion: This observational study demonstrates the advantage of using the new silicone wound contact layer. This dressing avoids ingrowth of the granulation tissue into the foam cells

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CLINICAL EFFECTIVENESS OF ALGINATE SILVER DRESSING IN OUTPATIENT MANAGEMENT OF PARTIAL-THICKNESS BURNS

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Alginate silver dressing is an advanced wound dressing which combines the potent broad-spectrum antimicrobial action of silver with enhanced exudate management properties of calcium alginate and polyurethane foam. The purpose of this study was to compare the efficacy of alginate silver dressing and 1% silver sulfadiazine (1% AgSD) in the outpatient management of partial thickness burn wounds. A prospective descriptive study was conducted between January 2008 and January 2009 in Burn unit, Siriraj Hospital. The 65 patients with partial thickness burn wounds were treated at Siriraj outpatient burn clinic. All patients were divided into alginate silver dressing group (30 patients) and 1% AgSD group (35 patients). The present results demonstrated average pain scores in the alginate silver dressing group were significantly lower than the 1% AgSD group (2.23±1.87 versus 6.08±2.33, respectively) between both groups ($p < 0.02$). Patients treated with alginate silver dressing had significantly lower number of wound dressing change ($p < 0.02$) and nursing time ($p < 0.02$) compared with 1% AgSD treated group. The alginate silver dressing group needed less frequent dressing change. Healing time was 7+3.51 days after the application of alginate silver dressing. This was significantly shorter than that of control wounds (14±4.18 days). Application of alginate silver dressing leads to a good burn wound outcome. The present study confirms the effectiveness of alginate silver dressing in the outpatient management of partial thickness burn wounds.

* Askina Calgitrol Ag® is alginate silver dressing

Dressings

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A LABORATORY EVALUATION OF A SOFT SILICONE SEALANT

Emma Stegberg[1].

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Aim: To evaluate the ability of an innovative new soft silicone sealant* to prevent fluid leakage.

Methods: Assay 1: A ring of sealant was applied to the skin of a volunteer's forearm held horizontally. A transparent film dressing with a hole (2 mm diameter) punched into its centre was then applied over the sealant. The dressing was allowed to rest for 10 minutes, after which five drops (each 5 µL) of a coloured liquid were applied to the skin through the hole. Assay 2: A ring of sealant was applied to an irregular-shaped synthetic surface and a transparent film dressing applied over it. The dressing was allowed to rest for 30 minutes, after which the coloured liquid was applied through a small aperture in the sealant ring until the space under the dressing had been filled. For both assays, digital photographs were taken immediately after application of the liquid, and again after 10 and 20 minutes, to observe signs of leakage beyond the sealant. Both assays were repeated 10 times under identical conditions.

Results: Digital photography did not detect any leakage of fluid in either model at any time point.

Conclusions: The soft silicone-based product is an effective sealant when used on flat and uneven surfaces in a laboratory setting. Studies are underway to determine the efficacy of the sealant in the clinical setting.

*Mepiseal™ (Mölnlycke Health Care, Gothenburg, Sweden) with Safetac®

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A SURVEY OF NURSING PRACTITIONERS TO ASSESS THE PERFORMANCE OF AN ALL-IN-ONE SOFT SILICONE FOAM DRESSING IN POST-OPERATIVE WOUND CARE

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[2]*HUS Töölö Hospital (Helsinki, Finland)*
[3]*HUS Jorvi Hospital (Helsinki, Finland)*

Aim: To survey the opinions of experienced surgical nurse practitioners on the efficacy of an all-in-one soft silicone foam dressing* (surgical sizes) in the post-operative treatment of surgical wounds, as compared to previously utilised dressing regimes.

Methods: A questionnaire designed to establish the suitability and performance of the all-in-one soft silicone foam dressing in the treatment of surgical wounds, as compared to previously used dressing combinations, was distributed to three hundred surgical nurses in three Finnish hospitals. The survey response rate was 38%.

Results: The 113 nursing practitioners that responded to the survey found the all-in-one soft silicone foam dressing easy to use with excellent performance characteristics.

Conclusions: Nursing practitioners found the performance of the all-in-one soft silicone foam dressing to be superior to previously utilised dressing regimes in the treatment of surgical wounds.

* Mepilex® Border with Safetac® (Molnlycke Health Care, Gothenburg, Sweden)

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SOFT SILICONE DRESSING WITH SILVER VERSUS SILVER SULFADIAZINE CREAM IN THE TREATMENT OF PARTIAL-THICKNESS BURNS: A RANDOMISED CONTROLLED TRIAL

Paul Silverstein[1], David Heimbach[2], Herbert Meites[1], Barbara Latenser[3], David Mozingo[4], Fred Mullins[5], Warren Garner[6], Joseph Turkowski[7], Marion Jordan[8], Paul Glat[9], Gary Purdue[10].

[1]*Paul Silverstein Burn Center (Oklahoma City, OK, United States)*
[2]*Harborview Medical Center (Seattle, WA, United States)*
[3]*UI Burn Treatment Center (Iowa City, IA, United States)*
[4]*Shands Burn Center (Gainesville, FL, United States)*
[5]*Joseph M. Still Research Foundation (Augusta,GA, United States)*
[6]*Southern California Regional Burns Center (Los Angeles, CA, United States)*
[7]*NewYork Presbyterian/ Weill Cornell Medical Center Burn Center (New York, NY, United States)*
[8]*The Burn Center, Washington Hospital Center (Washington, DC, United States)*
[9]*St Christopher's Hospital for Children, Pediatric Burn Center (Philadelphia, PA, United States)*
[10]*Southwestern Regional Burn Center (Dallas, TX, United States)*

Aim: To determine if the introduction of a new dressing regime for partial-thickness thermal burns could improve healing outcomes and reduce treatment costs

Methods: A randomised, multi-centre trial was conducted to compare the efficacy and cost effectiveness of a soft silicone dressing with silver (MAg)* with silver sulfadiazine cream (SSD) in the treatment of partial-thickness thermal burns. Data collection took place at initiation (<36 hours post-burn) and at assessment days 7, 14, 21, with follow-up at day 35 where wound assessment and pain measurements were undertaken. The CBO questionnaire, SF-36 health survey and EQ-5D health utilities measurement were used to assess consequences of burns, quality of life and QALY analysis.

Results: The MAg group (n=49) had shortened mean times to healing (p=0.097), reduced hospital stay (p=0.0346) and required fewer dressing changes, compared to the SSD group (n=51). Differences in pain intensity, in favour of MAg, were noted at application, (p=0.001) during wear-time (p=0.003) and on removal during the initial post-burn period. Mean total cost of therapy/patient was $296.80 and $503.89 for the MAg and SSD groups, respectively.

Conclusions: The new regime performed better clinically (reducing pain and enhancing healing rates), and also achieved measurable reductions in healthcare costs

*Mepilex® Ag (Molnlycke Health Care, Gothenburg, Sweden)

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EFFECT OF COLLAGEN/ORC/SILVER ON THE INFLAMMATION CHARACTERISTIC OF CHRONIC WOUNDS: THE IN VITRO AND CLINICAL EVIDENCE

Breda Cullen[1], Molly Gibson[1], Lorna McInroy[1].

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Chronic wounds can remain unhealed for weeks, months or years. Persistent inflammation caused by high levels of inflammatory cytokines and proteases create a hostile environment. Advanced wound therapies must be able to address excessive inflammation and create an optimal environment for wound healing.

In this study we have utilized an *in vitro* model to measure the ability of wound dressings to affect inflammation. The clinical relevance of these results has been determined by measuring inflammatory cytokines in wound fluid from venous leg ulcers, pre and post treatment with Collagen/ORC/Silver.

In addition we assessed the ability of Collagen/ORC/Silver to inactivate elastase, an inflammatory protease.

In vitro, the Collagen/ORC/Silver dressing reduced levels of proinflammatory cytokines; an effect not observed with similar levels of silver alone. Other silver-containing dressings caused significant inflammatory cell death *in vitro*. Levels of inflammatory cytokines were reduced in wound fluid from venous leg ulcers post treatment with Collagen/ORC/Silver, showing that the *in vitro* results have clinical relevance.

The ability of Collagen/ORC/Silver dressings to inactivate elastase was found to be primarily due to the presence of ORC, as Collagen/Silver dressings had limited effectiveness against this protease.

This study has demonstrated the ability of Collagen/ORC/Silver to reduce inflammatory cytokines and proteases both in our *in vitro* model and in the clinical setting. These results suggest that the application of Collagen/ORC/Silver to chronic wounds will reduce inflammation and correct biochemical imbalances allowing healing to progress.

Dressings

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DESIGNING IN VITRO, IN VIVO AND CLINICAL EVALUATIONS TO MEET THE NEEDS OF THE PATIENT AND CLINICIAN: DRESSING-WOUND ADHERENCE

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Designing clinically relevant in vitro and in vivo evaluations to assess wound care dressings is notoriously challenging.

Aim: To develop in vitro and in vivo methodologies to assess one aspect of particular significance to the patient and clinician: dressing-wound adherence.

Method: To provide a biological matrix and simulate the wound bed, fibrin clots were used for in vitro evaluations. Briefly, a fibrin clot was placed between two pieces of test dressings and the force (g) required to separate the dressings from the clot after a 24 hour incubation period was measured; the greater the force required, the higher the potential adherent properties of the dressing. Dressing concepts that displayed high adherency to the fibrin clot were not developed further. The final dressing concept (non-adherent silver alginate dressing) was evaluated both in vivo in a porcine partial thickness excisional wound model and in patients to further assess dressing performance.

Results: In vivo data showed a high degree of correlation with results derived from the in vitro fibrin clot method. The non-adherent silver alginate dressing showed a lower level of adherence than a commercially available fibrous dressing. Similarly, case studies presented in this study have demonstrated that the clinical results are consistent with the experimental findings.

Conclusions: Results indicate that non-adherent silver alginate dressing demonstrates a high level of non-adherence to the wound bed as demonstrated in vitro, in vivo and in patients. In addition, the dressing effectively managed wound exudates.

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FLUID UPTAKE, SPREADING AND RETENTION CAPACITY OF FOAM DRESSINGS ON AN INCLINED PLANE

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Aim: In the clinical setting, wound dressings are subjected to mechanical (e.g. when patients turn in bed). If, as a result of pressure being applied to a dressing, exudate comes into contact with the skin; this can cause maceration. An in-vitro study was undertaken to investigate the effects of applying of two commercially available foam dressings.

Methods: A sodium/calcium chloride solution (Solution A), prepared according to EN 13726-1:2002, was used to represent wound fluid. 5ml of Solution A was added to each foam dressing. Pressure was then applied to the dressings. The retention capacities of the dressings and their abilities to seal around wound edges were assessed.

Results: Differences in the ability of the foam dressings to retain and spread exudate were observed.

Discussion / Conclusion: When chronic wound exudate comes into contact with peri-wound skin, maceration can occur. In order to prevent this, wound dressings should be designed in such a way as to optimise their ability to retain exudate within them. This study has used in-vitro laboratory tests to mimic problems seen in clinical situations. The findings suggest that, due to differences in retention capacity and spreading of exudate, the use of the dressing utilising soft silicone* technology is least likely to result in maceration.

*Safetac (Molnlycke Health Care, Gothenburg, Sweden)

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A CLINICAL SURVEY TO ESTABLISH THE VIEWS OF WOUND CARE PRACTITIONERS ON THE EXTENT OF DIFFICULT-TO- DRESS WOUNDS

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Aim: To establish the extent of and the problems encountered in the management of wounds that are difficult-to-dress and associated with leakage. To identify the clinical challenges posed by these wounds and the strategies that are utilised to manage them.

Methods: Delegates attending a specialist wound care conference were approached randomly and requested to complete a questionnaire.

Results: 59 questionnaires were completed by a variety of types of health care practitioner. 40% of respondents reported that 41% or more of their average client group have difficult-to-dress wounds and suffer the effects of exudate leakage onto the peri-wound region. Location was given as the main reason for wounds being difficult-to-dress (95% of respondents), followed by fragile skin (53%). Maceration was identified as the most common consequence of exudate leakage onto the peri-wound region (98%) followed by discomfort and increased dressing change frequency (90%).When asked how often they had to change dressings earlier than planned due to leakage, 44% of respondents scored above 5 on a line scale of 1-10. The preparations most commonly used to manage maceration of peri-wound region due to leakage were barrier films, barrier creams and hydrocolloids.

Conclusions: Difficult-to-dress wounds and associated leakage of exudate onto the peri-wound region are frequently encountered in clinical practice. These issues have a significant impact from both clinical and financial perspectives.

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A COMPARATIVE STUDY OF A PORCINE ACELLULAR DERMAL MATRIX VERSUS A HYDROCOLLOID DRESSING IN SPLIT SKIN GRAFT DONOR SITES

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[1]*St James Hospital (Dublin, Ireland)*

1) Aim: To examine the efficacy of a porcine acellular dermal matrix dressing in the healing of split thickness skin graft donor sites, compared to our standard hydrocolloid dressing, in the setting of the National Burns Unit of Ireland.

2) Methods: Following split thickness skin graft harvesting, each donor site was dressed with both a porcine acellular dermal matrix and hydrocolloid dressing (a split site model). After 10 days the dressing were removed and the donor site healing was assessed using digital planimetry. The wounds were also assessed for exudate, dressing soakage and requirement for dressing replacement.

Nursing staff were also surveyed to score their overall satisfaction with both dressings for each of the study patients.

3) Results: The donor sites dressed with the porcine acellular dermal matrix showed greater epidermal regeneration at 10 days with less exudate and less frequent dressing changes.

The nursing staff surveyed expressed a higher level of satisfaction with the use and outcome of the porcine acellular dermal matrix dressing.

4) Conclusions: These findings support the adaptation of the porcine acellular dermal matrix as a standard skin graft donor site dressing in a Plastic Surgery Unit, and show it reduces dressing time to healing and number of dressing changes needed in total. It is also the peferred dressing of the nursing staff involved in the above context.

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WITHDRAWN

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HYDRATED, SUPER ABSORBING COPOLYMER DRESSING AS A NEW THERAPEUTIC CHALLENGE FOR NON HEALING WOUNDS

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Aim: Hydrated, super absorbing copolymer is a new dressing with bioactive properties modulates proteins and ions. The product mimics the behaviour sulpha-glycosaminoglycans, which have the influence on growth factors and cytokines, regulate proteases and modulate the inflammation reaction (1). We evaluated it as a new therapeutic option for non healing ulcers.

Methods: We unclude 12 patients (9 women, 3 men; aveage 74 years) with13 non-infeced and 2 infected leg ulcers (an average diameter 14.6 cm). At start and one month after therapy area and circumference of ulcer were measued by computer planimetry with photography and wounds' beds were assesed according to Falanga's classification. Horizontal initial healing rate was calculated using Gillman's equation. All patients wear long stretch compression bandages and had systemic rutozid.

Results: 13 of 15 wounds improved during one month of therapy with new dressing. An average horizontal initial healing rate in first month was 0.2 cm, all wounds' beds, except four were granulated after one month of therapy. Only 2 patients felt discomfort while wearing new dressing. Later on infections with *β haemolytic Str.* and *Ps. aeruginosa* were confirmed.

Conclusion: According to fast average horizontal initial healing rate, wounds' beds improvement in first month and patients' satisfactions, we founded new dressing as a promising new challenge for local therapy for non-infected chronic wounds.

1) Principelle Matrix®

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A UK COUNTY WIDE WOUND MANAGEMENT FORMULARY– FROM INCEPTION, THROUGH IMPLEMENTATION TO CLINICAL OUTCOMES – GETTING THE TIMING RIGHT

Michelle Greenwood[1].

[1]*Honourary Tissue Viability Nurse, (Worcester, United Kingdom)*

A UK County wide wound management formulary- from inception, through implementation to clinical outcomes- getting the timing right.

Introduction: Following their inception in 1990's, Wound management formularies are used to assist clinicians in appropriate selection and use of wound management products. This is increasingly important within the UK National Health Service (NHS) as direct financial costs to the Department of Health for dressings, stoma products, continence aids and chemical reagents is in the region of £631 million per year (PaSA 2006). Clinical decisions and expenditure within wound management need supporting. The PCT wound management formulary has been in place for 9 years with an annual spend over £2.5 million on dressings, bandages and tapes.

Method: The consultant nurse reviewed the formulary focusing on the single largest spend. Foam and foam/ silicone formed a significant spend within the formulary.

A strategic group was developed with care taken in relation to stakeholder engagement as the decision regarding the chosen foam / foam silicone needed to be supported to ensure it was adhered to across the PCT.

Results: A literature review, stakeholder meetings, commercial presentations was undertaken to provide:

- Evidence based practice providing a framework to support safe practice.
- Promote continuity of care.
- Support prescribing based on Trust formulary.
- Encourage safe and appropriate dressing use.
- Provide a rationale for prescribing ensuring cost effectiveness

Outcomes and the future
Prescribing and compliance was monitored with successful implementation. Audit work demonstrates this. Further audit is planned in high spend areas.

Dressings

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THE COMPOSITE WOUND DRESSINGS FOR TREATMENT OF THE BURNS AND SKIN ULCERATIONS

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The family of composite wound dressings (WD) based on the usage of chitosan gel was developed. All this WD include potent antimicrobial agent - silver in form of nano particles. The complex study of toxicological properties, antibacterial and wound healing activity bactericidal properties, safety, sanitary and chemical characteristics and wound-healing activity of these materiala showed the high level of its safety and efficiency. The mechanism of the antimicrobial action of silver nano-clusters was examined by different way, including electronic microscopical study. The study of bactericidal activity of silver's nano particles within hydrogels has shown high bactericidal efficiency along with very low concentrations of silver.

The numerous tests provided on the animals showed the efficiency of the dressings. The introduction into the gel layer of WD of superoxidedismutase permits to achieve anti-inflammative activity. In case of the presence of epidermal growth factor into the gel the acceleration of the wound healing was achieved.

Chitosan hydrogel dressings with silver clasters were used for local treatment of patients with trophic ulcers of limbs and for treatment of of second degree deep and third degree burns. Based on received results the conclusion on high efficiency of a wound dressing was made. This medical product can be widely used in ambulatory and clinic practice. Dressings provide favorable course of wound process, facilitates regeneration of tissues, leads to reduction of the healing time. Chitosan hydrogel dressings, containing silver nanoclasters and other bioactive compounds are very perspective for usage in surgical practice.

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THE USE OF POLYHEXANIDE CONTAINING WOUNDCARE PRODUCTS IN NON- INFECTED WOUNDS

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[2]*Rijnland Hospital, Dept. Surgery (Leiderdorp, Netherlands)*

Introduction/Backgrounds: Last year at the EWMA conference at Helsinki we showed you a poster presentation in which we have shown the wound model as used in our wound centre. A short reminder: The model*, focuses on treating the underlying pathology together with local wound care. The model consists of three sequential steps. Step 1 is to diagnose the patient through careful history and examination. Step 2 is to determine the wound phase: debridement, granulation or epithelisation. Step 3 is to beware of infection and ischemia.

Step 3 is also an important step in our model, because as we all know: an infection disturbs the wound healing process. That is why we see so many product for locale wound care with additions to stop the infection, like silver and honey. The last years we see more different product with polyhexanide. We all know that these producs give good results used in infected wounds.

But we also use these product in wounds with no signs of infection like redness around the wounds. However we see good results of progression in wound healing in the granulation and epithelisation fase, we are curious what the literature tells us about this.

Aim of the Study: To find out the results of using wound care products with polyhexanide, in clinicly non- infected wounds

Method: A literature study of using wound care products with polyhexanide, in clinicly non- infected wounds.

Results and conclusions: The results of using products with polyhexanide in non-infected wounds are so promising that further reaserch is called for.

* The Rijnland Wound Model

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AMINO ACIDIC GEL VERSUS HYDROGEL: WHICH IS THE QUICKER DEBRIDER?

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[2]*Residenza Principe Oddone Geriatric Institute (Turin, Italy)*

Introduction: hydrogels were designed to remove non-viable tissue with autolytic mechanism. The resulting debridement is bloodless and simultaneously granulation is promoted. The presence of amino acid mixtures in a hydrogel should theoretically speed up the granulating tissue and this action should take place simultaneously with debridement.

Aim of the work: to prove that an amino acidic gel can really promote granulation together with debridement in the treatment of necrotic wounds and that we can highlighten a quicker area reduction in comparison with any other hydrogel.

Materials and Methods: we enrolled 40 necrotic wounds of any aetiology which did't need surgical debridement. Wound areas were detected by digital planimetry. The lesions were treated with an amino acidic gel or with an hydrogel in an alternating randomized choice. We evaluated the results in terms of effectiveness and time of debridement, amount of granulating tissue and area reduction.

Results: all the treated wounds had an effective debridement, but only the ones which were treated with the amino acidic gel showed more granulating tissue and a significant area reduction. We had the complete debridement within 12 days about with both treatments, but the area reduction was more significant in the group that used amino acidic gel.

Conclusion: the gel formula of amino acidic mixtures is as effective as the other hydrogels in terms of debriding action, but there is a significant acceleration in the production of granulating tissue and in reduction of area.

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EVALUATION; FIRST EXPERIENCES OF AN NEW ONE SIDE SILICON CONTACT LAYER

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Aim: To asses the effectiveness, and evaluate advantages providing by a new one side silicon contact layer designed for the management of a wide range of wounds. We want to describe our experiences of this new dressing, and show how to use it correctly.

Methods: This evaluation is carried out in different home care centers.

Patients are entered into the evaluation after the decision to treat with the evaluation products has been made. Patients are treated according to the product insert leaflet ant standard local centre practice throughout the evaluation. Data is collected at every dressing change until healing or until treatment with the evaluation products is discontinued.

Photography will be utilized to document wound progress over the period of use of dressing.

10 patients with different wounds were included (Burns, leg ulcers, pressure ulcers and traumatic wounds).Once a week, we evaluated the efficacy and the properties of the dressing and wound development.

Results: As well on the chronic as on the acute wounds, we achieved a good woundhealing environment. The dressing could stay in place more time than all else (till 3 weeks). It was very conformable in difficult places. This dressing creates a high comfort at the wound. Rest of clinical results will be presented at the conference.

Conclusions: These evaluations will demonstrate the performance of these new dressing within their indicated uses, and we will show their right use.

Dressings

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INFLUENCE OF HYALURONATE IODINE GEL ON RECALCITRANTS WOUNDS

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[1]*Army Military Hospital Wound Care Unit (Rome, Italy)*

Aim: To assess the benefits of a sodium hyaluronate - iodine gel in the management of complex chronic wounds of vaying aetiologies including pressure sores, vascular leg ulcers, surgical cutaneous dehiscences and acute soft tissue injuries with exposed colonized bone.

Methods: Nineteen patients (13 males, 6 females) with recalcitrants complex wounds were treated with a hyaluronate-iodine gel and assessed sequentially using clinical measurements of wound area and depth, microbial burden and wound exudate. Time to complete healing and associated treatment used were recorded for 8 weeks.

Results: Seven of the 19 patients' wounds healed completely within sixty days of commencing local therapy. Eight patients have had a recognised reduction of the wound area and depth; three patients showed a clear reduction of the undermined tissue and the crevices' size. Six patients reported reduction of exudate; two patients reported increase level of exudate.

Conclusions: The patients enrolled in this study were known to have delayed healing of their wounds and they had been treated, in other clinical settings, for a mean of 12,6 months, for a range of other concomitants issues, including colonized bone, presence of fistola and cervices, exagerated wound exudate and a reduction in quality of life. The use of a hyaluronate-iodine complex, associated with variables secondary local dressings, promoting an increasing healing process and a decrease in wound exudate and bacterial burden,should be considered as an effective tool in the treatment of recalcitants complex wounds.

Dressings

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HYDROGEL SEEKS SECONDARY DRESSING... DESPERATELY

Yves Lurton[1], Claire Le Marec[1].

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The objective of this study was to search, in the range of hydrocellular dressings, for a dressing allowing to preserve the hydrating properties of hydrogels to find an alternative to the thin hydrocolloid and transparent adhesive films used in secondary dressings on hydrogels.

Methods: The absorption and water vapor permeability capacities of different hydrocellular dressings placed on contact with a reference hydrogel (1) as well as the hydration capacity of the hydrogel covering these dressings were measured in vitro and compared to those of a transparent adhesive film and thin hydrocolloid by using a hydration model (gelatin): standard AFNOR EN 137261

The results emphasize the negligible humidity absorption of the hydrogel by the majority of hydrocellular dressings and, on the other hand, a significant loss of humidity through water vapor permeability. The adhesive film and thin hydrocolloid dressing remain the secondary dressings that allow the best respect of the hydrogel hydration capacity; the choice of hydrocellular dressings that are not very permeable by water vapor will limit the loss of humidity of the gel.

(1) Purilon Coloplast (2) Mepilex Transfer

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EFFECTS OF 4 CALCIUM ALGINATE-BASED MEDICAL DEVICES ON HUMAN FIBROBLAST CULTURES

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[3]*Service de dermatologie, Hôpital Saint-Jacques (Besançon, France)*

Objective: We compared the effects of 4 calcium alginate-based dressings* on human fibroblast cultures.

Methods: One-layer cultures were used to study the morphology and production of collagen I and III by fibroblasts. Equivalent dermises allowed the observation of myofibroblastic differentiation (alpha-SM-actin) and morphology (F-actin), in dressings after immunohistochemical tagging.

Results: The fibroblasts were put in the presence of either the dressing or its extract, contingent on their compatibility with the culture environment. None of the dressings manifested a cytotoxic effect and one dressing** even displayed a proliferative effect. The morphology of fibroblasts was not changed in the presence of dressings as confirmed by the immunotagging of the F-actin. The myofibroblastic differentiation (alpha-SM-actin) was not disturbed. The 4 calcium alginate-based dressings increased the collagen I production of fibroblasts. The effects of the dressings were also beneficial on the collagen III production, but statistical differences were observed only with 2 calcium alginate-based dressings***.

Conclusion: These 4 calcium alginate-based dressings mainly increased the production of collagen I and III due to their composition. This can explain their beneficial effect on the formation and maturation of healing buds.

* Hemoionic, Coalgan-H, Algosteril and FOREseal
** FOREseal
***Hemoionic and Coalgan-H

P 100

AN EVALUATION OF A FOAM DRESSING IMPREGNATED WITH 0.5% POLYHEXAMETHYLENE BIGUANIDE (PHMB)* WITHIN THE CARE PATHWAY OF THE DIABETIC FOOT ULCER

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[1]*Turner Centre, St James Hospital (Portsmouth, United Kingdom)*
[2]*TVRE Consulting (Barlaston, United Kingdom)*

Introduction: The appropriate use of topical antibacterial dressings was considered as part of a project to develop a care pathway for the effective management of diabetic patients with foot ulceration. This was to be used by Podiatrists in addition to Hydrosurgical debridement and Negative Pressure Wound Therapy (NPWT)

Method: An evaluation of 5 patients was undertaken to assess the effectiveness of a foam dressing impregnated with 0.5% PHMB. Although the main purpose was to assess its properties as a bacterial barrier to prevent infection and its usefulness as a post NPWT dressing, additional properties, such as odour and exudate management were evaluated as well.

Results: The foam dressing impregnated with 0.5% PHMB was used effectively on all 5 patients. The care pathway is described as single cases supported by photographs where relevant.

It was observed that the dressing did not cause further trauma to the foot, was compatible with the devices used for off loading, and was acceptable to the patient.

Discussion: The use of effective, appropriate use of antimicrobial agents is a treatment option which should be considered in this group of patients who are at high risk of infection, and may need a bacterial barrier in contact with the wound surface.

Conclusion: Although the evaluation was limited in that it was a case series on a small cohort of patients, the results to date are positive. This suggests that it merits further studies to demonstrate its efficacy as part of the programme of treatment for diabetic patients with foot ulcers.

*Kendall™AMD antimicrobial foam dressing
This evaluation was sponsored by Tyco Healthcare Group LP
d/b/a Covidien, Mansfield, MA, 02048, USA.

Dressings

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AN EVALUATION OF 4 PATIENTS POST NEGATIVE PRESSURE WOUND THERAPY (NPWT) USING A FOAM DRESSING CONTAINING 0.5% POLYHEXAMETHYLENE BIGUANIDE (PHMB)*

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[2]*TVRE Consulting (Barlaston, United Kingdom)*

Method: Antimicrobial foam dressings are often used for a short period of time following NPWT. With the introduction of a new foam dressing containing 0.5% PHMB*, the decision was made to undertake a small evaluation on 4 patients to observe its effectiveness in managing exudate and preventing infection in the immediate post NPWT episode of care.

Data was collected on each patient on:-

• The progress of the wound using NPWT.

• The amount of exudate, any clinical signs of infection, and whether there was any wound odour at the time of removal.

• Any factors which may influence the cost of care,

Results: The results of the evaluation is presented as a case series on a range of patients, which demonstrates the PHMB impregnated foam dressing to be effective in managing complex wounds after NPWT has been discontinued. The description of care is supported with photographic evidence of the wound at the start of NPWT, the point at which this is discontinued and the evaluation dressing is commenced, and finally when the evaluation dressing is discontinued either because the wound has healed or because another type of dressing was required.

Conclusion: The foam dressing which was impregnated with 0.5% PHMB was observed to be effective as a post NPWT treatment. All wounds progressed well, with both exudate and odour managed effectively. Although no formal cost calculation was made there would appear to be an opportunity to reduce the cost of managing these patients without compromising on clinical outcomes.

*Kendall™AMD antimicrobial foam dressing.
This evaluation was sponsored by Tyco Healthcare Group LP d/b/a Covidien, Mansfield, MA, 02048, USA.

Dressings

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A 25 PATIENT EVALUATION OF A FOAM DRESSING IMPREGNATED WITH 0.5% POLYHEXAMTHYLENE BIGUANIBE (PHMB)

Kathleen Leak[1], Pam Spruce[2].

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[2]*TVRE Consulting (Barlaston, United Kingdom)*

Method: An evaluation of a new foam dressing impregnated with 0.5% PHMB* was evaluated on 25 patients.15 male and 10 female patients were recruited into the evaluation, providing a range of both acute and chronic wounds. The evaluation period ranged from 7- 28 days, where the new dressing was applied to wounds which were assessed as appropriate for treatment with an antimicrobial dressing

Results: On 17 patients the dressing was changed twice weekly, the remaining 8 patients received weekly changes

Prior to the evaluation, 18 wounds were heavily colonised to the extent that healing was impaired, 2 wounds had positive cultures for MRSA and the remaining 5 were locally infected.

At the end of the evaluation 9 wounds had progressed to healing, while a marked improvement in the condition of the wound bed was observed in of the remaining 16 patients.

A cost benefit analysis of the 9 patients with a healed wound who were treated with the evaluation dressing was compared to standard treatment (impregnated silver dressing). This demonstrated a cost saving of £86.06 per week in comparison to standard treatment.

Discussion: The foam dressing impregnated with 0.5% PHMB performed well in the evaluation. All of the wounds improved, it was acceptable to both nurses and patients and a potential cost saving was demonstrated.

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TECHNIQUE FOR TREATING SKIN TEARS IN THE ELDERLY BY AUTOGRAFT

Marthe Fauvet[1].

[1]*EPHAD (Lucé, France)*

The skin of the elderly is very fragile and often presents superficial tears in the members, of which the frequency increases with certain pathologies like cancer, diabetes, malnutrition…and at the end of life. For more than twenty five years, I have practiced my superficial skin tear treatment technique for the elderly of which the principal is the autograft.

Aim: The goal of this technique is to considerably reduce the healing time and limit the risks of infection and ulcer.

Method: This technique mainly requires placing the torn skin and flaps with precision, edge to edge to perfection, and position sterile adhesive bandages on the healthy skin. For its success, you must act from the observation of the wound before necrosis of the skin laps. The following dressings are painless and atraumatic.

Results: The healing time is very rapid, 2 to 9 days in comparison to 3 weeks with the classic method. The scars are very subtle.

Conclusion: This method is very economical, simple but meticulous and requires little material. It has successfully treated more than three hundred wounds. It could even be used with other patients.

P 104

SKIN LESIONS IN RADIATION THERAPY: NURSES DECIDING CARE

Silvana Prazeres[1], Andréa Conrad[1], Camila Marcadenti De Oliveira[1], Roselie Corcini Pinto[1].

[1]*Complexo Hospitalar Santa Casa de Porto Alegre - RS (Porto Alegre, Brazil)*

This study aims to evaluate the effectiveness of a wet dressing with calcium and sodium alginate associated with linoleic acid (LA) and D-alpha-tocopherol in the protection of living tissues exposed during radiotherapy treatment in patients with malignant neoplasm of head/neck.

The deleterious effects of radiation on tissues has been the subject of several studies in recent years. Reactions caused by the toxicity of ionizing radiation as radiodermatites are limiting factors in people's lives by promoting beyond pain and suffering, impairment of anatomy and physiology of the body.

In this study, two patients were monitored before, during and after radiation treatment for cancer (and nose and eye) in the postoperative period from excision of the tumor. Both had severe pain, bone exposure, soft tissue necrosis and irregularity of the bed and banks of the lesion, presence of purulent drainage with fistula to the oral cavity.

The wound treatment and protection of tissues was performed by a continuous coverage of the lesion with the above products, (submitted prior to the dosimetry for liberation), which were exchanged and reviewed by a nurse every three days.

hrough this therapeutic approach, we obtained satisfactory tissue protective acute effects of radiotherapy, reducing pain and discomfort, reduced necrosis previously established, growth of granulation tissue and improves the local blood supply. These results show that an interdisciplinary approach results in quality and effectiveness of therapeutic interventions.

Sample reduced by the rarity of cases.

Dressings

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TREATMENT RADIODERMATITIS GRADES II AND III IN CANCER PATIENTS

Roselie Corcini Pinto[1], Camila Marcadenti De Oliveira[1], Neiro Waechter Da Motta[1].

[1]*Complexo Hospitalar Santa Casa de Porto Alegre - RS (Porto Alegre, Brazil)*

Randomized clinical trial that aims to evaluate the effectiveness of the coverage of non-stick gauze in the recovery of radiodermatitis grades II and III, as ranked RTOG (Radiation Therapy Oncology Group) in cancer patients.

Radiotherapy is a therapeutic modality to combat cancer, which aims to prevent and/or destroy tumor cells by damaging DNA by ionizing radiation. Even targeting cancer cells, the healthy tissues with high mitotic rate - as epithelial cells lining - are affected, causing acute radiodermatitis.

Currently it is used as a protocol for the recovery of the skin affected radiodermatitis of grades II and III, treatment interruption (median time 10 days), development of painful dressings, once or twice a day (as exudate and extent of injury) with saline solutions, sprays and antibiotic silver sulfadiazine, among others. Considering the long period to reduce these injuries, suffering and risk of loss of local control of disease and decrease the chances of cure, it is urgent to rethink such conduct.

This study was carried out by nurses in the group of skin (GPTF) of a Cancer Hospital in Porto Alegre after detailed literature review. Patients suffering from cancer radiodermatitis grades II and III were selected, evaluated every two days, had their lesions cleared and covered with non-stick gauze (with indication of continuous use and changed every two days).

The data indicated that the proposed coverage showed excellent results, promoting the reduction of pain and recovery of tissues for an average of four days.

Dressings

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RADIODERMATITIS PREVENTION IN PATIENTS WITH BREAST CANCER TREATMENT IN RADIOTHERAPY

Roselie Corcini Pinto[1], Camila Marcadenti De Oliveira[1], Neiro Waechter Da Motta[1], Silvana Prazeres[1], Vânia Declair[1].

[1]*Complexo Hospitalar Santa Casa de Porto Alegre - RS (Porto Alegre, Brazil)*

Randomized controlled trials aimed at assessing the effectiveness of foam covering with thin inner layer of silicone to prevent radiodermatitis grades II and III, as ranked by RTOG (Radiation Therapy Oncology Group), in the breast during radiation treatment, as measured blocking and moisture transfer.

The study was performed with 88 women who had their fur evaluated weekly by nurses during treatment. They were divided two groups of patients, one arm using the conventional method of prevention (not access the area to sunlight, use mild soap for cleansing, protection against mechanical friction through cotton cloth, using bra and compresses of chamomile) arm and taking the same care protocol, and the cotton fabric replaced by coverage-based foam and silicone

The inclusion criteria were patients with breast cancer not ulcerated, with the first week of treatment, aged between 35 and 55, large breasts or presence of infra-mammary groove ≥ 1 cm with good hygiene. We excluded cases of malnutrition, previous injuries and dehydration.

The analysis of the data concluded that the cover offered by the study, through its protective coat of friction and transfer sweat to the secondary coverage was maintained in intact skin, acting effectively in reducing the incidence of skin lesions caused by ionizing radiation. Indicating an advance in scientific knowledge in relation to nursing care in the prevention and minimization of radiation-induced radiodermatites.

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SURGICAL TREATMENT OF BURNS WITH THE USE OF HYDROFIBRE DRESSING WITH SILVER*

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[1]*Regional clinical hospital, burns centre (city of Krasnodar, Russian Federation)*

Aim: A modern wound covering in combustiology has to meet a number of requirements: no adherence to a wound, possession of anesthetic, antibacterial and epithelization stimulating properties, also it has to create humid environment in a wound.

Methods: At our centre the hydrofibre dressings with silver* were applied on the dermal burns; on the donor sections; on autoplasty; on the wounds after early tangential necrosectomy and dermobrasy; on the granulating wounds.

Upon the contact with a wound surface, the hydrofibre dressings with silver* forms a humid environment, which favours to healing of wound. A hydrofibre dressing with silver*, applied on a wound, was kept there for 10 days and required no change. The hydrofibre dressings with silver* were applied in 37 patients. The follow-up group was composed of the patients at the age from 1 to 57 years. The area of burns varied from 1% to 17%. The comparison was made with the use of traditional method of treatment, incorporating application of the wet-drying dressings and the water soluble-based ointments.

Results: Our observations showed the period of epithelization with application of hydrofibre dressings with silver* reduce by 5-7 days as compared with the traditional methods of treatment, in the majority of observations a single application of hydrofibre dressing with silver* is sufficient.

Conclusions: The hydrofibre dressing with silver* after dermobrasy and necrosectomy accelerates the epithelization, reduces pain in sufferers, improves the cosmetic results of treatment.

* Aquacel AG

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PERFORMANCE OF A HYDRATION RESPONSE TECHNOLOGY (*) DRESSING IN MANAGING HEAVILY EXUDING WOUNDS

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[2]*Montpellier University Hospital (Montpellier, France)*

Introduction: Exudation represents an obstacle to wound healing. Most of the absorbing dressings present on the market have their own limitations, linked to the maximum capacity of absorbing fluids, and some of them being not able to retain moisture, which is a source of potential maceration.

New materials as provided by hydration response technology could provide a range of clinically relevant properties including removing exudate from heavily exuding wounds, significant debriding effects and improving healing rates.

This dressing have been tested on ten patients presenting a mix of necrosis and heavy exudation.

Patients description: 10 patients presenting leg ulcers or pressure ulcers having been previously submitted to a standard regimen of absorbing dressings (alginates or hydrofibers) for the last weeks (from 6 weeks to 9 months) presented exudation at a level where the dressing had to be changed twice a day.

Maceration of the edges of the wound were present and pain was important, evaluated to 8 on the VAS scale. Partial necrosis was noted on the edges of the wounds in 7 cases, fibrin was noted in 8 cases, and inflammatory signs present in all cases. The wounds showed contra indication for applying TNP devices.

The use of the hydration response technology dressing was started. The dressing was changed every day, then later on every two days. Necrotic tissue disappeared from the wound surface within three days, and a progression of the tissue granulation was observed. Within a mean period of 12 days, exudation was reduced to physiological levels and the wound was brought into the stage of epithelialisation. The evaluated dressing is better applied when the wound does not present excessive tumentuous contours.

Discussion: Dressings may solve difficult problems of excessive exuding wounds. However, they frequently concentrate on mere absorption capacities. Beyond this, professional exudate management and the imporant capacity of active fluid extraction also helps to dissolve necrotic fragments present on the wound surface, resulting in debriding effects as seen with this dressing based on hydration response technology.

Conclusion: Exudate management was performed by the evaluated dressing, and in addition significant wound bed preparing performances were observed in this initial trial. While the selected wounds were stagnating and reluctant from healing at the begining of this trail, significant improvement of the wound conditions were recorded within days. This development was achievable while reducing the overall treatment costs due to prolonged dressing wear time and less nursing time required.

This short series induces the need for further investigations, particularly in situations where negative pressure therapy might be recommendable but also, due to the presence of necrotic tissue, cannot be applied.

* sorbion sachet S, provided by sorbion Aktiengesellschaft, Germany

Health Organisation

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THE PREVALENCE OF WOUNDS IN FLEMISCH HOSPITALS AND HOMES FOR THE ELDERLY

Luc Gryson[1].

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The prevalence of wounds in Flemish Hospitals en Homes for the elderly.

Aim: As almost no figures are available in Flanders (Belgium) concerning the prevalence and type of wounds the students of the postgraduate programme woundmanagement ostomytherapy and tissue repair thought it was a major issue to find out how big the problem of 'wounds' was in the geografical area were they would go to work. Since 2009 we possess the results of a pilot prevalence study on chronic leg ulcers which estimated about 0.7% of all patients heve leg ulcers in institutionalised care in Flanders.

The study aims to give an acceptable insight in the number and type of wounds patients have in Flemisch hospitals en Homes for the elderly.

Methods: First ther was looked at the number of hospitals en homes for the elderly in Flanders. Secondly a randomised number of hospitals and homes for the elderly was picked out. Al these institutions were visited by a postgraduate student. there al the wards were visited with a questionaire to be filled in by the investigator.

The results were gathered and statistically transferred.

Results: The results show that we underestimated the number of wounds in Flanders and that we did not have a coorrect view on the balance between the types of wounds.

Conclusion: Wounds are a major problem in institutionalised care in Flanders. There are more wounds in Institiutionalised care i nFlanders then estimated.

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WITHDRAWN

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WITHDRAWN

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IMPACT OF INTERPROFESSIONAL DIABETIC FOOT CENTRE ON DIABETES-RELATED AMPUTATION RATES IN AN UNDERDEVELOPED COUNTRY

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[2]*Office of International Surgery, University of Toronto (Toronto, Canada)*
[3]*Unverisity of Toronto, School of Public Health (Toronto, Canada)*
[4]*Women's College Hospital (Toronto, Canada)*
[5]*Toronto Regional Wound Clinics (Toronto, Canada)*

Aim: Major amputation (above and below the knee) rates are particularly high in the developing countries due to the lack of systematized and evidence based approach to care. In a hospital in an underdeveloped country, 42% of admitted patients with a diabetic foot ulcer (DFU) would undergo an amputation. The purpose of this study is to evaluate the impact of an interprofessional wound team on amputation rate in persons with diabetes.

Methods: High risks patients were initially identified using the 60 second screening tool at an outpatient diabetic clinic and then referred to the foot clinic for follow-up. At the foot clinic, an interprofessional team was trained to provide on-going foot care of the patients by addressing vascular supply, infection of the wound, and pressure redistribution (VIP). A prospective chart review was performed to capture amputation data since the inauguration of the interprofessional foot clinic.

Results: Results indicated a significant difference in the number of amputations comparing data from 2005-2009 ($df=3$, $F=3.283$, $p=0.05$). Amputation rates were significantly lower in 2009 than those reported in 2005, 2006, and 2007 (t-tests; $p<0.001$). Interprofessional team approach that is based on evidence can improve health outcomes in patients with diabetic foot ulcers

Health Organisation

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FROM HYPOTENSION THERAPY OUTPATIENT CLINIC TO WOUND MEETING POINT

Xavier Jordan[1], Roland De Roche[1], Hansjörg Mühlemann[1], Mark Mäder[1].

[1]*REHAB Basel (Basel, Switzerland)*

Introduction: Within only one decade since its clinical introduction in Switzerland, the hypotension therapy within our rehabilitation center has established to become an essential therapeutic appliance to treat chronic wounds, particularly to treat ulcers caused by pressure. Therefore, the number in both stationary and outpatient hypotension therapies rapidly increased within the last few years. Because our medical and nursing team included experienced stationary wound specialists, we decided to make this knowledge available for outpatients as well. In autumn 2004 we started our wound meeting point, which is was mainly used by general practitioners to employ hypertension therapies.

Results: A retrospective evaluation of all hospitalizations for the treatment of decubitus in the year 2001 was already able to show the rapidly increasing significance of hypertension therapy: 46 decubitus ulcers within the pelvic area of 38 patients were stationary treated, of which 20 (stage II and III according to SEILER) healed up without surgery but with conventional wound treatment. 13 ulcers (stage III and IV) were covered by flap plasty.

Due to serious internistic accompanying illnesses of the patients, a major surgery was unreasonable for 15 of the 46 ulcers. In those cases, the hypertension therapy was employed after wound cleansing. In doing so, 5 stage IV ulcers located in stress-bearing areas (ischium, trochanter or sacrum) and 3 ulcerations caused by donor-site morbidity of flap plasties successfully healed up.

Discussion: We will give a report on the wound meeting point at the outpatient clinic of REHAB Basel, which within 5 years established to be a regional center of excellence to clarify and treat chronic wounds. The significance of temporal aspects will be the central focus of our report.

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PROMOTING INDEPENDENCE IN THE HOME CARE SITUATION OF PARAPLEGICS WITH WOUNDS

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ParaHelp is an independent nonprofit organization. We cooperate with the Swiss Paraplegic Centre Nottwil, leading hospital for patients with spinalcord injuries. Our clients are patients, family, care givers, doctors, insurance companies and other organizations involved with the patient.

Aim: Promote independant living.

Methods: Consultations take place at the patients' home, most common consultations being:

- pressure ulcers and skin problems
- bladder/bowel management
- pressurerelief
- family support

It's important to find treatments that are simple for the patient whilst maintaining their independence and preserving their QoL. An important aspect is finding solutions acceptable for both patients and caregivers. Wound-dressings need to be easy to apply and remove as well as promote rapid wound healing since it's usually the patient or his family that perform the changes.

We use polymeric membrane dressings as they are multifunctional and offer a great variety of possibilities.

Results: Polymeric membrane dressings are easy to apply for the patient and as well for the care givers. We have found that the wounds heal very fast with few complications. An example shown in this presentation will demonstrate the process and speed of healing.

Discussion: Our patients are often looking for a quick, uncomplicated ways to heal their wounds. As a mobile unite, it's important that we can recommend acceptable and practical solutions for our patients and caregivers.

We have found a dressing versatile enough to cover most types of wound indications with very good results.

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PROBLEMATIC WOUNDS TREATED IN PATIENT'S RECIDENSES BY SPECIALIZED NURSES, A HEALTH TECHNOLOGY ASSESSMENT

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[2]*University of Southern Denmark (Odense, Denmark)*
[3]*Roskilde Hospital (Roskilde, Denmark)*

Aim: Patients with chronic pressure wounds are treated by nurses in the primary health care, guided by hospital wound care department specialists. Quality of treatment depends on compliance to guidelines. Regular visits to the hospital for elderly weakened persons in wheelchairs or bedridden, include long, costly transport and waiting time.

Methods: In a randomized setup, the consequences of outgoing wound specialist nurse, guiding the assessment and treatment in the home, were compared to treatment at the hospital outpatient woundclinic.

Results: 85 patients with pressure ulcers

Clinical consequences were evaluated in relation to the healing process- at baseline and once a month. Follow up 6 months. Economic consequences were evaluated in relation to timeconsumption (outpatient clinic, outgoing specialist and primary nurses), transport, materials and other healthcare services.

In order to avoid hospital visits, patients expressed satisfaction with home visits. They experienced good cooperation between specialist and primary nurses, a higher degree of involvement, better quality of wound care. 94% recommended the outgoing specialist nurse.

Primary nurses acknowledged the bed-side supervision. Home visits attributed to understanding of ulcer etiologi and treatment. Guidelines were adjusted to home environments and needs of the patients, enhancing prevention and increasing treatment compliance.

Conclusions: Treatment of ulcer patients at home by outgoing specialized nurses is viewed as an attractive alternative when outpatient treatment is a challenge or there is a need for improving treatment quality. The results in relation to the clinical and economic consequences will be presented.

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A COST-EFFECTIVENESS ANALYSIS OF A SILVER DRESSING FOR MALIGNANT FUNGATING WOUND OF CANCER PATIENTS

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Aims. The purpose of this study was to compare the costs and effectiveness of malignant fungating wound (MFW) using a silver dressing (SD) and a non silver dressing (NSD).

Methods: This study utilized a randomized experimental design. A total of 30 cancer patients with MFW were randomly assigned to SD or NSD with a follow-up of two week. Effectiveness measures were health-related quality of life (MQOL-TW), and Malignant Fungating Wound Assessment Tool (MFWAT).The costs measures for each patient were: health care costs.

Results: Subjects in the SD group demonstrated significantly better outcomes in the effectiveness measures of MQOL-TW and MFWAT. Additionally, the total social costs for each MLEP patient and CESP patient were US$5,396.90 and US$8,570.54, respectively. The cost-effectiveness ratios in these two groups showed that the SD model was better than the NSD model after one intervention cycle.

Conclusion: These results provide for the first time reliable exploration for silver dressing in cancer patients with MFW using a well-validated method. Although the study was conducted in Taiwan, the findings are relevant to the care of palliative ill cancer patients with MFW worldwide.

Health Economy and Outcome

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REIMBURSMENT OF WOUND CARE PRODUCTS IN PORTUGAL: A SURVEY

João Gouveia[1], Pedro Ferreira[2].

[1]*GAIF (P. Serra, Portugal)*
[2]*CEISUC (Coimbra, Portugal)*

Aim: There´s no policy of reimbursement on wound care products in Portugal, either for treatment of preventive measures. GAIF felt it was important to know how the healthcare professionals felt to be the chance if the wound care materials could be reimbursed, would be the best way, which should and should not and if there was any difference between been a physician, nurse or a pharmacist.

Method: The study was an open survey, exploratory, random, multicenter, and it was conducted all over Portugal and Islands. The study started on the 3rd January 2009 closing the 28 September 2009. We got more than 2000 answers, but by the time of sending this abstract we only had 294 inserted.

Results: From the results, 83% were female, 88,1% were nurses, 40,1% we´re working on the south of Portugal, and 57,5% in Hospital Care. About the wound Care material they had available, 82% had gauze, 95,5% had paraffin gauze, 96,6% had hidrogel. About reimbursement, 99% were in favor. When asked “what percent?”, 43,9% answered «100%». About witch wound care products should be reimbursed, 67,3% are in favor of all type of material.

Finally, when asked about which should be the major burden in wound care, 65,6% answered the time related with the changing of the dressing.

Conclusions: From these results, we believe that the reimbursement is a major concern for the healthcare professionals, even with different sensibilities on the value of the reimbursement.

Health Economy and Outcome

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COST COMPARATIVE STUDY OF DRESSINGS USED IN SUPERFICIAL PARTIAL THICKNESS BURNS

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Aim: Partial thickness burns are extremely painful resulting in an ongoing challenge to find a dressing that maintains a moist wound environment, prevent infection while decreasing the patient’s level of pain. In the current financial climate, nursing time and costs savings are equally as important when deciding which dressing to use. This study reveals a cost comparison between 1)a daily traditional silver sulphadiazine (SSD) with a non- adherent layer under gauze to 2) a new silver impregnated silicone foam (SISF) dressing changed twice per week.

Methods: A comparative study was done using a patient with 20% total body surface area (TBSA) superficial partial thickness burns to evaluate the type and number of dressing changes per week required using both dressing methods. Pain, nursing hours and dressing cost was compared.

Results: The patients treated with SSD required pain relief daily prior to dressing changes. The dressing took 2 nurses 1 hour to do on a daily basis. The total weekly cost of this dressing is 658 EUR (See attached table). The patients who were treated with the SISF only required les pain relief and expressed no pain on dressing removal. The dressing took 2 nurses 30 minutes on a twice weekly basis and the weekly cost of this dressing was 388 EUR despite the fact that this dressing is considerably more expensive initially.

Conclusion: Treating a patient suffering from painful superficial partial thickness burn with SISF reduces dressing changes, cost, nursing time and most importantly pain caused by dressing removal.

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ECONOMIC ASPECTS OF TOPICAL NEGATIVE PRESSURE WOUND MANAGEMENT

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The clinical advantages of the TNP. system involve the provision of a closed dressing allowing a moist healing environment which stimulates formation of granulated tissue, reduces bacterial load and necrosis and hence reduces dehydration. The special filtration system provides comfort for the patient, reduces the number of dressing replacements and visits of attending personnel.

Material and methods: We compared the cost of treatment of extensive wounds using TNP therapy and traditional wound care. We evaluated the duration of therapy, pain, using visual analog scale and the cost of materials used in TNP and traditional therapy. We also calculated the time that medical professionals spent providing the treatment. We recorded changes in laboratory indicators, microbiological cultivations from wound swabs and the use of antibiotics. We evaluated the effectiveness of both methods of wound care.

Results: Due to the fact that the use of TPN therapy is still very restricted, we were only able to evaluate 12 cases. However, our results clearly indicate that TNP therapy is more economical and more comfortable for the patient. Patients stopped taking antibiotics, they suffered less pain and the duration of treatment was shorter.

Our study proves the economic benefits of using the TNP system in hospital care. We should stress that there exist TNP systems for home care which are economically even more beneficial as they involve savings on the hospitalization of a patient and the work of healthcare professionals, however, thus far these have not been funded by Czech health insurance companies.

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MEASURING AND DEMONSTRATING QUALITY IMPROVEMENTS IN PATIENTS RECEIVING NEGATIVE PRESSURE WOUND THERAPY

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Aim: To measure clinical outcomes and demonstrate areas for quality improvement in patients receiving Negative Pressure Wound Therapy in three Primary Care Trusts in the UK.

Method: In partnership with industry, an outcome tracking database was developed that allows the prospective collection of information about wounds receiving NPWT. Data collection commenced autumn 2009.

Results: Initially piloted to get clinician feedback, the dataset was then refined. Enablers such as flow diagrams, local clinical guidelines, training materials, teaching sessions and support for staff from the respective tissue viability services were implemented. There are over 70 completed episodes of NPWT treatment to date, the most common wound type being surgical wounds. Data will be subsequently analysed and published.

Conclusions / Discussion: Clinicians have accepted the efficacy of NPWT based on their ongoing experience to date. However it is essential that clinicians monitor the types of patients receiving therapy and the outcome achieved in order to support the continued use of this advanced wound care intervention. The recently published paper “NHS 2010-15: from good to great” (DOH 2009) insists on people centred, preventative and productive care to drive efficiencies and ensure a culture of continued improvement. This project allows clinicians to measure and demonstrate the value of negative pressure and also highlight areas for quality improvement over time. Analysed data will be used to inform clinical decision-making going forwards and patient benefits will be realised as specific treatment pathways emerge.

P 121

A NEW WOUND CARE APPROACH YIELDS CONSIDERABLE FINANCIAL AND LOGISTICAL VALUE, AND HIGH SATISFACTION BY STAFF AND PATIENTS

Ruth Winblad[1].

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Over the last 4 years a new wound care approach that includes the use of polymeric membrane dressings has been introduced in a large number of nursing homes and district nursing zones in Norway. To evaluate the quality of the overall approach including the polymeric membrane dressing, surveys of facility satisfaction have been performed.

Aim: Evaluate the quality of the new wound care approach.

Method: The new approach is based on structured implementation of training and protocols around the use of polymeric membrane dressings, as well as follow-up activities and identification of a wound care contact person. After one year each department at each institution was provided a questionnaire where wound dressings, protocols, training, logistics and economical aspects were graded on a Likert scale. Statistical reporting and verification was then performed by independent statistician.

Results: 103 departments from 37 different institutions responded (75%).

- 81.4% fully/partially agreed that new approach had created more focus on wound care.
- 94.1% supported the statement that wound care had become easier.
- An overwhelming majority (78.4%) stated that they fully/partially agreed that wounds heal faster with Polymeric membrane dressings.
- The responders further reported the new protocols were simpler (99.0% fully/partially agreed), that dressing changes were faster (99.0% fully/partially agreed), and reduced the need for additional dressing materials (92.9% fully/partially agreed).

Conclusion: The new approach has considerable financial and logistical value for the institutions, and high satisfaction by staff and patients.

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HELPING DELIVER HIGH QUALITY CARE WITHIN YOUR BUDGET

Debbie Gleeson[1].

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Aim: In many clinics no specific budget is allocated to wards to treat patients with Negative Pressure Wound Therapy (NPWT), and no agreed funding or referral guidance from Primary Care Trust's (PCT's) to support this therapy upon discharge. So patients are spending unnecessary time in hospital while in condition to be sent home.

Method: In 2008 the Trust's Tissue Viability Nurse collaborated with the local PCT's to facilitate a collaborated approach to develop an effective discharge pathway. Aim was to secure long term rental of NPWT*, provide fair and transparent funding in an efficient value for money way, reduce waiting times, enable service and quality improvement and reduce wasted bed days and facilitate timely discharge for patients on NPWT with home support. Question: 'Should there be a trade-off between innovation and cost?'

Results: Patient numbers treated increased 29%. Number of in-patient treatment days reduced 21.3%. Average number of treatment days

reduced 32.96%. Number of days wasted on previous too long hospital stay was 41.66%. Due to non wasted days ability to treat more patients

increased 43%. Costs reduced GBP 15,724.90 saving 20%.

Additional benefits: immediate treatment at the point of need, efficient discharge, patients that were healed, would stay healed. Patients quality of life was hugely increased.

Conclusion: Timely transition/discharge of patients from in-patient treatment to PCT can reduce total treatments cost and creates the possibility to treat more in-patients.

* NPWT in use was V.A.C.® Therapy (KCI Medical Ltd., UK)

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DEVELOPMENT OF A NEW POSTGRADUATE QUALIFICATION FOCUSING ON SKIN INTEGRITY SKILLS & TREATMENT

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Aim: this paper will describe an innovative master's degree which has been designed for Practitioners with a Special Interest in Skin Integrity such as GPs, specialist nurses, podiatrists & pharmacists which facilitates development of wound management and dermatology expertise whilst benefiting from shared, inter-professional learning.

Methods: in recent years, the overlap between dermatology and many other specialities including wound management has become apparent1. But training and knowledge of health professionals in the management of skin integrity is limited 2. Healthcare providers are responsible for ensuring practitioners have the right skills to treat patients safely and competently which require changes in the way that postgraduate education is provided. The requirement for postgraduate education to be of sufficient breadth and depth to deliver high quality care together with the need to provide e-learning and innovative approaches to education will be discussed 3, 4.

Results: this novel curriculum utilises expertise using e-learning technologies that provide flexible professional development for busy health practitioners which will be shared as a means of promoting best practice. A particular feature of this programme is the use of the EWMA University Conference Model (UCM) to deliver modules at international conferences which have been positively evaluated by students 5.

Conclusion: This educational approaches discussed offer innovative solutions to help unite policy, service improvement and workforce development to ultimately improve the management of patients with compromised skin integrity.

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8 YEARS CONTRIBUTION OF GAIF ON PORTUGUESE WOUND CARE PANORAMA

João Gouveia[1].

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Aim: In 8 years of existence, GAIF as became a reference, either in Portugal, and abroad, from all the work it has been developed among is several Boards and associates. It is this work that we intent to present in this Meeting, trying to motivate other associations to follow our efforts in the persecute of the same goals, better care to patients with wounds and increase the dissemination of research and knowledge in wound care.

Method: We used all the data's about the students that attended the GAIF Wound School (8 already, more than 270 student´s), all the contacts and feedbacks made by person´s who contact GAIF asking help or tutorial for application of several tool in wound care, Conferences, Workshops, Symposiums organized by GAIF and the satisfaction reports delivered after Education classes supported by GAIF members in Faculty's and Nursing Schools.

Result: For the results, we can state that GAIF is well recognized as the main Group research in Portugal in Wound Care, as well in disseminating evidence. GAIF as a net of more than 300 volunteers in several thematic groups (DFUG, PUG, LUG, NG, QoLG) and as the recognition of the most notable Centers of Investigation in Science in Portugal, having protocols signed with several of them.

Conclusion: In future, GAIF wants' to keep the balance between the good quality of research and expectations of the members and associates of GAIF. Finally, we do believe that Portugal as diminished the gap compared with other countries, concerning WCare issues.

Education

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HAND HYGIENE IN HOSPITALIZED PATIENTS – HOW DIFFICULT CAN IT BE?

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MRSA and ESBL infections are an increasing problem at hospitals. Hand hygiene is the main method to prevent cross infections. In our ward a pamphlet: «Hand hygiene, information for patients and relatives» and a small bottle of hand alcohol are provided at the admission interview.

Aim: To improve patient safety by preventing the possible spread of infection between patients and between patients and staff.

To assure that our patients have got information and can perform hand disinfection and hand washing correctly.

Methods: Intervention: Pamphlet thoroughly reviewed with patient. Teaching of hand hygiene in practice. Patients perform hand hygiene under supervision.

Questionnaire and patient interviews before and after intervention.

Results:

15 patients	Pamphlet		Pamphlet reviewed	Hand alcohol	
	Yes	No		Yes	No
Before	3	12	1	3	12
After	15	0	13	14	1

15 patients	Read pamphlet	Answer questions	
		Yes	No
Before	0	1	14
After	12	13	2

15 patients	Perform hand hygiene correctly		Can find alcohol dispensers in ward	
	Yes	No	Yes	No
Before	1	14	1	14
After	14	1	14	1

Conclusion: Distribution of hand alcohol and review of pamphlet are limited. Patients are not instructed in correct hand disinfection and washing. Patients were surprised by their inadequate hand hygiene. Nurses must teach and demonstrate hand disinfection and washing to the patients.

Vision: Alcohol dispensers and alcohol serviettes placed accessible to patients.

The pamphlet must be more readable and alcohol serviettes placed on the serving tray at each meal.

Education

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THE WOUND BOX: A TOOL TO STRENGTHEN THE CO-OPERATION IN WOUNDCARE

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Summary: For transparency in woundcare, uniformity of treatment policy and use of prescription of wounddressing materials is required. General practitioners lack knowledge and experience in woundcare, but are main prescribers. Woundcare consultants are experts in use of wound dressing materials, but do not prescribe. Both have responsibilities in woundcare, so they have to co-operate to prevent unnecessary delay in healing, spill of materials and increase of costs.
The wound box is a tool to help the GP to initiate woundcare and contains a common protocol, a selection of wounddressing materials and a prescription form.
After being trained, the GP can purchase a wound box.

Aim:
- professional development
- improvement of co- operation
- cost reduction

Methods:
Expert group
a delegation of professionals (GP, pharmacist, wound care consultants) in primary care and hospital setting to create conditions for cooperation.
A common protocol
Education: training of all disciplines concerned in woundcare, to increase knowledge of woundcare, to learn how to use wounddressing materials and the common protocol, and how to co-operate.
Wound box: a 35 ltr box, containing a selection of wound dressing materials

Follow-up
- randomized interviews with users of the box
- continuation of training

Results: In 2009 10 trainings, 302 participants, 45 boxes in use

Conclusion:
1. the wound box is practical and simple
2. increased knowledge of woundcare
3. correct use of expensive wounddressing materials
4. insight into mutual tasks and responsibilities

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WITHDRAWN

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DIFFICULTY OF DECISIONS CONCERNING TREATMENT MONITORING AFTER ASSESSMENT OF THE WOUND HEALING PHASE

Bidet-Dazin Dominique[1].

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Aim: Exchange concerning the experience on the fact that theoretical knowledge and practical wound treatment experience are not always enough to ensure effective treatment during a training program.

Method: During a continuous training program on wound treatment in Cameroon, we created, in collaboration with several Cameroonian instructors and professionals from two treatment centers, a model for wound monitoring and a reference table for the type of treatment depending on the stage of the wound. These documents are references for the wound monitoring and adapting treatment.

Results: Despite the encouraging results regarding the quality of wound treatment, we note that it is difficult for most caregivers to make the decision in changing treatment when the state of the wound is stagnant or worsens after a satisfactory period of healing. Even if they note the worsening or stagnation, the right questions are difficult to ask to move forward.

Conclusion: If updated knowledge and practical demonstrations are indispensable for improvement in wound treatment, the transmission of the art of deciding on the right treatment at the right moment requires a support in daily practice that is not always easy to implement.

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PRESENTATION OF A "PLAY-WOUNDS" GAME TO TEST WOUND AND HEALING KNOWLEDGE

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Aim: Propose an interactive and evolutionary computer product that allows players to assess and develop their knowledge on wounds and healing.

Method: The project conceived and developed in 1990-1991 by a stoma therapy nurse, manager of nurse treatment was resumed and developed. Inspired by a type of game, Trivial Pursuit®, it can be played individually or in a group. The period database has been reviewed and updated. The nursing students were able to test the tool multiple times and their returns were considered.

Result: The first version is proposed during this conference. By the bias of present interactive terminals, 5 main themes were submitted to the participants: anatomy-physiology, wound description, healing process, wound typology and healing factors. It includes true/false questions and other multiple choice questions, with or without a photo to which some are to respond in a given time. The winner is the person who makes the least amount of errors in the 5 proposed items.

Discussion: A development of the tool is planned, notably to propose a version for specialists including the development of a theme on preventative and therapeutic alternatives. The questions/responses must be updated and developed regularly.

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NURSES WOUND MANAGEMENT EDUCATION IN CZECH REPUBLIC

Andrea Pokorná[1], **Romana Mrázová**[1].

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The nurses education in wound management in the Czech republic is still not very well arranged at the pregradual educational institutions. There are some special educational courses prepared in the lifelong learning but there is no central system provided.

Aims: To evaluate the system of nurses education in wound management in the Czech Republic. To find out the similarities and diferences between the educational activities and the content of the education.

Methods: Questionnaire survey and Computer Assisted Telephone Interviewing (CATI).

Results: We have been evaluated that the wound management education for nurses is not very well arranged at all the educational settings in the Czech Republic even if it is under the control of Ministry of Health. There are some variances especially concerning the content of the tuition (some courses are not focused on the nursing interventions and wound assesment or on the prevention of infection disseases etc.). There are also problems after the graduation of the courses. Nurses graduated in the courses could not work independently inspite of their certification from the course. There are some legislation obstacles.

Conclusion: It is really necessary to prepare the centralize system of wound management nursing education in Czech Republic with connection to the clinical praktice with the good evaluation procedures as well.

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IMPROVING CHRONIC OEDEMA MANAGEMENT ACCROSS A PCT: THE PAST, PRESENT AND FUTURE

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Aim: To promote best practice in relation to chronic oedema throughout a trust serving 555,000 patients.

Method: An audit carried out in 2008, within the County Tissue Viability team established chronic oedema management as a challenge. The timely identification of patients with chronic oedema was identified as crucial by all respondents. However, only 3 could apply full leg bandaging. The need for a strategic approach to improving chronic oedema management was identified.

An educational programme was developed and implemented to 200 staff, incorporating:
timely assessment
diagnosis of chronic oedema,
evidence based treatment strategies incorporating full leg bandaging with cohesive inelastic bandages.

Ongoing training will be planned for 2010 following re-audit, along with the development of trust guidelines for the management of chronic oedema.

Results: Over 200 staff have received formal chronic oedema training since January 2009. Staff have completed competencies and a data base of competent staff is now provided to the PCT Directors. Feedback from staff has so far been very positive

Conclusion/Discussion: Partnership within the organisation has been crucial to the ongoing success of this programme. Future plans include demonstrating cost benefits of appropriate chronic oedema management. This will include economic cost and the cost to the individual (quality of life).

Exploring economic cost and quality of life issues in relation to chronic oedema will support this best practice and facilitate change within the PCT.

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WOUND MANAGEMENT EDUCATION OF NURSES IN CROATIA

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Background: Education of nurses is an ongoing process under constant changes and challenges. The role of nurse is determined by her knowledge and skills, defined her competence to provide best care for the patients. Nowadays, basic nursing education in Croatia gives very little opportunity to learn more about wound care treatment. At the same time, the role of nurses in wound care is very important, especially where nurses provide wound care without supervision in healthcare facilities, such as community nurses, nurses delivering care in nursing homes and institutions for elderly care.

Aim of this research was to define the need for education and specialized training of nurses in the field of wound management and treatment. This paper will discuss the role of education of nurses in wound management.

Method: Questionnaire was used and data about the personal learning experience and training possibilities were collected among nurses in settlements of Croatia (Rijeka, Dubrovnik, Zadar, Slavonski Brod and Zagreb), working in different segments of healthcare: hospital settings, primary healthcare centers, nursing homes.

Results: The results of the study defined education needs and provided information needed for development of education course as well as design of the best teaching and training model.

Conclusions: Professional education has an enormous importance for further development of nursing practice. Education needs to be more systematic, provide training of specific nursing skills under supervision of experienced personnel in the best learning environment. Education needs to provide the framework through which knowledge and skills will ensure best wound care.

Education

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REGISTERED NURSES IN HOME NURSING SERVICE PREVENTING DIABETES FOOT ULCERS?

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Background: Home nursing service is responsible for a vulnerable patient group in assisted living and in patients' home. About 20% of diabetic patients dependent on home nursing service have ongoing foot ulcer, constituting substantial work load for the nurses. Patients with long diabetes duration often develop neuropathy: decreased sensitivity, deformities and calluses in the feet. These conditions constitute risk factors for ulceration, chronic wounds and risk of amputation. Direct causes of ulceration are ill fitting shoes, external trauma or pressure ulcers. Structured nursing actions to prevent diabetic foot ulcers in the home nursing service have been un-known.

Aim: To describe registered nurses' professional work with foot ulcer prevention in home nursing setting for diabetic patients.

Method: Semi-structured interviews from 15 registered nurses in home nursing service in Sweden representing big city, small city and rural area were analysed using content analysis.

Result: Nurses mainly perform the preventive work though others; using staff education as main tool. Nursing actions taught were regular foot inspection, use of ointment, mobilisation of patient, and providing access to podiatry service. Staff education was home tailored and unstructured. The nurses reported good access to antidecubitus equipment. Responsibility for adjusted shoes was on patient him/herself or next of kin. Documentation for evaluation was not used structured and the scope of the problem was not acknowledged. Most nurses' formal education was old and not academic.

Conclusion: Registered nurses in home nursing service need more education in diabetes risk assessment, and pedagogical methods for staff education.

Education

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DO WE HAVE EVIDENCE THAT TOPICAL NEGATIVE PRESSURE IS THE TREATMENT METHOD OF CHOICE FOR DEEP STERNAL WOUND INFECTION IN CARDIAC SURGERY?

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Aim: The question strives to address whether topical negative pressure (TNP) is the method of choice for the treatment of deep sternal wound infection (DSWI) in cardiac surgery.

Methods: Using the reported research, 148 papers focused on the treatment strategies of DSWI were identified and reviewed (Medline database since January 1980 to December 2009). Fifteen papers represented the best evidence on the subject: Comparison of the conventional treatment versus the TNP therapy. All comparative studies had a retrospective design and mostly focused on a limited sample size.

Results: Primary application of TNP was associated with significantly lower rate of theraputic failure, shorter or comparable in-hospital stay, and particularly a considerable lowering of the in-hospital and long- term mortality in comparison to the conventional therapy. The risk of chronic fistula formation was comparable in both groups.

Conclusion: Growing experience with the application of TNP as first-line therapy in the treatment of DSWI is demonstrating its safety and effectiveness. However, currently the evidence to endorse its routine use is still relatively weak. A prospective randomized controlled trial comparing TNP with conventional therapy is obligatory to substantiate its routine primary use, efficacy and cost-effectiveness.

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IMROVEMENT OF COMPRESSION BANDAGING BY TRAINING WITH A PRESSURE MONITOR

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Aim: The objective was to investigate whether compression bandaging training with a pressure monitor supports nurses to achieve compression bandaging of high quality.

Methods: The sub-bandage pressure was measured under three consecutive multilayer compression bandages applied by 21 nurses before and after training and the introduction of a pressure monitor. The measurement was performed in supine and in standing position. A questionnaire was used to evaluate self-ratings before and after the intervention.

Results: Before intervention a questionnaire revealed confidence of the nurses in reaching sufficient sub-bandage pressure levels. However 34.9% of all bandages were shown to be insufficient before intervention (<20 mmHg or ≥60 mmHg). Only 17.5% were insufficient after intervention, representing a statistically significant improvement through intervention. 77.3% of the insufficient bandages were applied by nurses with more than 10 years of working experience. Optimal pressure (35-45 mmHg) showed 9.5% of the bandages before and 31.7% after intervention. Furthermore the mean sub-bandage pressure in active standing position, a marker for the working pressure, was improved from 38.7 mmHg to 64.3 mmHg after intervention (optimal: 50-70 mmHg).

Conclusions: Continuous awareness and training are necessary to maintain sufficient compression bandaging. Long work experience and self-rating alone is not sufficient to maintain adequate quality in compression bandaging. A pressure monitor gives direct feed-back on sub-bandage pressure, an important aspect of an efficient compression bandage.

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LABORATORY AND CLINICAL PRACTICE OF TREATMENT EXECUTION FOR WOUND PATIENTS-OPINION OF NURSING STUDENTS

Luis Paiva[1], Fátima Luzio[1], Verónica Coutinho[1], **Nazaré Cerejo**[1], Rui Baptista[1], Carlos Ferreira[1].

[1]*Escola Superior de Enfermagem de Coimbra (Coimbra, Portugal)*

Objectives: Identify the opinion of students concerning the execution of treatment of a wound patient, after the realization of this practice, in the laboratory and clinical instruction, and analyze the suggestions of these students.

Methodology: An exploratory/descriptive study was conducted with a collection made up of 30 4th year students of the Nursing License Program.

Results: It is noted that the majority of students consider that the laboratory practice of this procedure allows them to develop self confidence, manual dexterity, a relation with the patient, aseptic technique and contributed to the improvement of records. They report that the school has an excellent simulation center, which is important to repeat the execution of the procedure, to become familiar with the products to apply on the wounds and that the laboratory practices should be evaluated.

Conclusions: The students had the opinion that they must be transmitted knowledge on the products necessary for the execution of treatments for wound patients, and that the laboratory procedure must be repeated and submitted to evaluation.

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DIVERSITY OF TREATMENT FOR WOUND PATIENTS – OPINION OF THE NURSES

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[1]*Escola Superior de Enfermagem de Coimbra (Coimbra, Portugal)*

Objective: Identify the opinions of the nurses on the type of treatment to carry out for the wound patient with the same characteristics.

Methodology: Exploratory, quantitative study, surveying 72 nurses from three hospital treatment units and one primary health treatment unit.

Results: Regarding the treatment of wound 1, it was verified that all of the nurses would use the same base product, while combining it with others. In wound 2, nine nurses would use one type of product, seven another, with different combinations and one only used one product. In wound 3, twelve nurses would use the same treatment, four would opt for a different one, all with combinations and two would call on various treatments. Finally, in wound 4, eleven nurses would use the same product, four used another and three created another option.

Conclusions: It is noted that the nurses have a diversity of opinions regarding the treatment to apply in each wound, which suggests the necessity of continuous training in this knowledge sector given the constant innovation of products presented by the pharmaceutical industry, among other factors.

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RECOGNIZING INFECTED WOUNDS

Marie-Hélène Tarteaut[1-2], **Nadia Donnat**[1-2], Karine Jaggi[1-2], Michèle Arbona-Victorion[1-2], Laurence Toutous-Trellu[1-2], Hubert Vuagnat[1-2].

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Infected wounds have particularities that are more or less easily recognized by healthcare providers. The first signs are detected during the nurse observation, who perceives the change in the state of the wound by aspect, color, odor, exudate and/or pain. Nevertheless, the clinical confirmation of wound infection remains difficult.

We remember the main clinical criteria of an infected wound and, through a few photographs, the differences between the main infectious wound complications. This allows healthcare providers to precociously identify these signs for a fast medical, therapeutic and/or surgical treatment.

The complications of presented wounds are: cellulite, necrotic fasciitis and gaseous gangrene with Fournier gangrene. These complications are significant for the patient; their direct and indirect cost consequences are being increasingly underlined and retain the attention of all health professionals. A precocious recognition of obstacles to the healing process allows a quick targeted intervention to stop the infectious process.

It is therefore important to recognize the changes in the wound (inflammation, color, heat, odor, exudate, and delay in healing) as well as the state of the patient (pain, feverish state and possible complaints). These precisely noted data allow to assess the progression of the infection and suspect signs of wound reinfection.

The appearance of all of these symptoms is more or less fast; there are numerous internal and external factors that may affect the patient. They are to be considered for the optimal treatment of a wound.

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A PATIENT HEALTH PROFESSIONAL PARTNERSHIP FOR OPTIMUM HEALING MANAGEMENT

Marie-Hélène Tarteaut[1-2], **Karine Jaggi**[1-2], Nadia Donnat[1-2], Michèle Arbona-Victorion[1-2].

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The physiological healing of a wound rarely poses a problem. On the other hand, when it is delayed, that is the moment to go over the factors that may be preventing healing, to understand the process in progress and respond to it effectively.

Aims: Determine the expectations and actions of each partner – patient or health professional, “wound”- to lead to an optimum healing.

Discussion: It is a true “challenge” for the health professional, who must demonstrate specific theoretical and practical knowledge in the domain where wound treatment is in constant evolution.

The patient, on their part, is disarmed facing a wound that does not evolve favorably. Often, it is painful, exudative, smelly, infected and bothersome and it can limit their independence, even returning to work…

The caretaker/patient partnership here reveals its importance.

The health professional is at the patient’s service to know the evolution of the wound. The patient helps us in this approach because who better to truly know the history of their wound from the beginning, in a context where treatment is sometimes divided. Therefore, the health professional, with the assistance of different specialists, will follow a medical approach to seek the completely safe stability or healing of the wound.

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THERAPEUTIC EDUCATION FOR DIABETIC PATIENTS: ‘I TAKE CARE OF MY FEET’

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Faced with an increasing number of diabetics requiring short periods of hospitalisation, the authors have develped an innovative, simple and interactiv DVD to ensure the therapeutic education of patients with type II diabetes. This work results from a collaboration between medical and paramediccal teams. The tool is an animated film on a multilingual DVD wich comprises seven educational sections. diabetics patients thus have access to the different steps in therapeutic and preventiv management, wich they can watch at their own pace. the caracters in the film encounter different situations in everyday living, including all changes to behaviour wich can prevent the complications related to diabetes. A mascot in presented, in order to express strong messages wich need to be remembered. The care team then summarises the information provided and answers any questions from patients. This DVD is a teaching tool, used by nurses for the purposes of therapeutic eduaction.

Education

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IMPLEMENTATION OF A PRACTICAL PODOLOGICAL EDUCATION PROGRAM FOR DIABETIC PEOPLE

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"20 to 25% of diabetic people (DP) see a professional for a foot lesion," according to the specialist committee ALFEDIAM [French Language Association for Diabetes and Metabolic Disease Studies]. 30,000 to 50,000 amputations are caused each year by diabetes. The psychological and financial impact is significant. Therapeutic education of DPs proved its efficacy (prevention and reduction in number of amputations) and has a fundamental importance.

The PREVENTIONS ARTOIS association implemented a training program for health professionals and educational workshops for DPs and their loved ones. In 2003, play workshops for podologically at-risk individuals were created. The cycle allows DPs to become aware of their perception of their feet, acquire simple monitoring steps and avoid at-risk behavior. The healthcare providers adapt to the specificity of the group. A structured program and pedagogical techniques are promoted to reach set goals. Since 2005, an educational report has been realized to determine the expectations, needs and degree of motivation for the improvement of DP support (179 participants).

The assessment was completed with a questionnaire. The preliminary results are encouraging. Of the 78 questionnaires received, 42 people pay more attention to their choice of footwear, 52 monitor their feet better/have better foot hygiene. None were hospitalized for a wound or amputation.

These results incite us to supplement this program with reminder sessions to establish these messages, assess and readjust the objectives initially set between the healthcare provider and the DPs at the time of the educational report.

Infection

P 142

IS POLIHEXANIDE EFFECTIVE IN THE TREATMENT OF BIOFILMS IN WOUNDS

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Aim: This review looked at antimicrobials, specifically polihexanide (PHMB) used for infected wounds, containing a bio-film. Wound healing may be delayed as bacteria present are often resistant to the host's immune response. In - vitro studies indicate that antimicrobials have an effect on dismantling bio-films in wounds. This effect is much smaller than the antibacterial effect on infected wounds without a bio-film.

Method: A systematic literature review was undertaken, using the following key words: Wound infection, bio-film, topical antimicrobials and polihexanide.

Results: The treatment of bio-films in wounds is not yet fully explored. A total of 24 studies were selected of which N = 8 were excluded due to their lack of relevance. One study was excluded as this case study could not ensure validity. Included were N = 15 studies (n = 4 reviews on bio-films in wounds, n = 4 in-vitro studies, n = 3 reviews on anti-bacterial treatment and n = 4 clinical studies on PHMB in infected wounds).

Conclusion: The presence of bio-films in infected wounds may further strengthen the pathogenic properties of the bacteria present. Various studies have indicated in-vitro that topical silver and povidone iodine have little effect. Clinical studies indicate that PHMB may have a positive impact on bio-films in infected wounds. It was shown that continuous application of PHMB using a hydrobalance dressing was superior over using PHMB for cleansing during dressing changes.

P 143

THE USE OF TNP* THERAPHY FOR METHICILLIN-RESISTANT-STAPHYLOCOCCUS AUREUS INFECTED WOUND

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Aim: Methicillin-Resistant-Staphylococcus aureus (MRSA) has been increasingly recognized as a cause of nosocomial infection. MRSA is hardly-controllable organism among the pathogen of nosocomial infection. It is resistant to most antibiotics except vancomycin, and local treatment with most antiseptics are not effective. The effectiveness of TNP* was reported widely. We tried to modify original TNP*. We tried TNP* dressing on MRSA infected wound to evaluate whether or not TNP* is effective to eradicate MRSA which existed in the open wound.

Methods: From September 2003 to December 2003, 24 patients admitted to our clinic, were studied. All patients were found to be positive in previous wound. Using clinical randomized study, 24 patients were divided into two groups: TNP* dressing group and the Betadine dressing group (control). During treatment, wound culture was done twice a week for evaluation of MRSA infection elimination.

Results: The mean period that MRSA become not detected in all case was 17.1 days in TNP* dressing group, and 25.8 days in control group, respectively. The p value was 0.013. The result reveals that the TNP* dressing group is more effective to MRSA infection control. As a result, the TNP* dressing was more effective in MRSA infected wound than conventional dressing.

Conclusion: Through this study, we found objective result of TNP* dressing. We hope that TNP* dressing is more widely applied to fresh and infected wound either

* Vacuum-Assisted-Closure (Vac)

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THE IMPORTANCE OF DRESSING CONFORMABILITY ON ANTIMICROBIAL ACTION OF SILVER-CONTAINING WOUND DRESSINGS: AN IN VITRO STUDY

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Background: Chronic wounds are polymicrobial, with bacterial colonisation originating from external sources such as surrounding skin, the gut and the mouth. As a consequence, bacterial burden exists predominantly in superficial wound tissue where biofilm inevitably develops, providing the colonising bacteria with an environment that may give them a competitive advantage over the host.

In order to minimise the opportunity for infection in chronic wounds, it is important that the superficial bioburden is controlled and maintained in a state that is not problematic to the host. In this respect, wound management practices such as cleansing, sharp debridement and the use of antimicrobial dressings are important. In order to maximise antimicrobial potency in superficial wound tissue, selection of a dressing that conforms well to a wounds unique topography is likely to be important in order to maximise exposure between bacteria and the antimicrobial agent.

Aim: In this in vitro study, models were utilised that enabled both visualisation of the conformability of silver-containing dressings with a simulated wound tissue, and the effect that intimate contact between a silver-containing dressing and a simulated bacteria-colonised superficial wound had on antimicrobial potency.

Results and clinical relevance will be discussed.

Infection

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ELECTROTHERAPY AND INFECTED BEDSORES

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Introduction: for over 20 years there is literature on electrotherapy in the treatment of chronic skin lesions. Studies were made on increasing blood flow and oxygenation, on promoting granulation and encouraging the migration of fibroblasts. Currently we have no data on infected wounds, especially on pressure sores.

Aim of the work: to prove that electrotherapy can be really effective in the treatment of infected bedsores.

Materials and Methods: we analyzed 30 critically colonized pressure sores (according to the criteria of Kutting & Harding) in patients without signs of infection of perilesional tissues; swab culture was performed. Wound areas were detected by planimetry. The ulcers were treated with adsorbent medications, not antiseptics. Was not prescribed any systemic antibiotic treatment. Electrotherapy (90 minutes per day in 3 sessions of 30 minutes each) was continued until remission of the signs of critical colonization; in case of clinical worsening the treatment was stopped. We evaluated the results in terms of clinical effectiveness, reduction of area and bacterial colonies.

Results: most of treated wounds had a significant improvement within 10 days. We had no worsening and a good result in terms of bacterial colonies reduction.

Conclusion: electrotherapy can be really effective in the treatment of infected bedsores. We are just working to prove that electrotherapy can be considered an adjuvant, evaluating the effectiveness of this treatment together with antibacterial dressings.

Infection

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COMPARISON OF A SILVER ALGINATE AND SILVER CARBOXYMETHYL CELLULOSE DRESSING

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Aim: To investigate the physical properties and microbiological efficacy of a non-woven, high G (gluronic acid) silver containing alginate dressing in comparison to a silver carboxymethylcellulose dressing.

Methods: The absorbency of the dressings were determined by the BS EN 13726-1:2002 Test methods for primary wound dressings – part 1: Aspects of absorbency. The silver content was measured by atomic absorbance (AA) after adding 1g of a dressing to an acid solution to digest the fibres. For silver elution the dressings were placed in simulated wound fluid and incubated at 37^0C. Portions of the fluid were sampled at different time points and analysed using Atomic Absorption Spectrophotometry to determine the concentration of silver in the solution over time. The tensile strength (wet and dry) of each dressing was also determined. A repeat challenge log reduction study was also performed on each dressing type.

Results: The silver alginate dressing had a higher absorbency, a similar lateral wicking ability and a higher wet strength than the silver carboxymethylcellulose dressing. In addition, silver alginate had a comparable silver elution with the silver carboxymethylcellulose dressing but overall the silver alginate dressing showed greater antimicrobial efficacy, for up to 21 days, against a number of micro-organisms.

Conclusion: The silver alginate dressing outperformed the silver carboxymethylcellulose dressing in several key areas and was comparable in most others. The silver alginate dressing overall was the most efficacious against all micro-organisms tested, as measured by the repeat challenge log reduction test.

P 147

TRACKING MIC DISTRIBUTION BY DIFFERENT WOUND SPECIMENS

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Aim: To measure the impact of, wound specimen type on mimimum inhibitory concentrations (MIC) and establish whether there was “creeping” MIC’s within a semi-quantitative SIR [susceptibility (s), intermediate (i), resistant (r)] category.

Methods: We have studied wound infections and antibiotic resistance with an electronic Surveillance System (TSN), noting a broad range in MIC’s associated with different types of specimens. The TSN is a national, USA based surveillance system utilizing daily uploads from over 500 hospitals, selected for location and population density. Search parameters include hospital type, size, location, and 16 organism parameters. Analysis was conducted with the TSN Database – USA, 2009, a unique repository of strain specific antibiotic results reported daily by individual US institutions. Here, we tracked six sources from wounds against six selected similar antibiotics tested for five frequent wound organisms.

Results: For Gram negative rods, the greatest range was for *Pseudomonas aeruginosa* for Ceftazidime (≤0.5 – 64) and Ciprofloxacin (≤0.25 – 8), and for Gram positive, *Staphylococcus aureus*, Ciprofloxacin (≤0.25 – 8) and Clindamycin (≤ or = 0.2 – 4). The smallest cluster of MIC’s was Vancomycin for *Enterococcus faecalis*. Specimen MIC variance from the means of each antibiotic was ranked as follows, greatest to least: 1. Wound Drainage/Pus, 2. Abscess, 3. Aspirates, and 4. Biopsy/Tissue and 5. Soft Tissue.

Conclusion: The wound specimen type does influence the recovery and antibiotic resistance profile of antibiotic combinations, and source information should be used in evaluating laboratory test results.

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ARE WOUND SPECIMENS COLONIZED WITH THE MOST RESISTANT ISOLATES AND ASSOCIATED WITH ANTIBIOTIC PRESSURE?

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Aim: To measure the magnitude of antibiotic changes and recognize the selective pressures applied by empiric intensive care unit (ICU) antibiotic protocols for wounds compared to common ICU infections.

Methods: We have tracked resistance at West Virginia University Hospital (WVUH) using the TSN surveillance system since 1993. Here, we wanted to focus on intensive care unit (ICU) wounds, tracking over time changes in resistant profiles at 5 year intervals, compared to isolates isolated from bloodstream infections (BSI), urinary tract infections (UTI), and lower respiratory infections (LRI). The TSN national electronic surveillance system was populated daily from more than 500 participating hospitals selected by demographic and institution type. First recovered isolates from 4 sources were sorted by antibiotic results paralleling systemic protocols for specific diseases of WVU Hospitals. The national data was compared to WVUH data.

Results: The resistant profile for wound drainage, BSI, catheter urine and LRI for six isolates and 6 antibiotics were quite similar and did not suggest unusual resistant markers for wound drainage. The most resistant isolate for all specimens was *Staphylococcus aureus*, followed by *Enterococcus faecium*; the least resistant isolates were *Enterobacter cloacae*. *Proteus mirabilis*, *Klebsiella pneumoniae* and *Pseudomonas aeruginosa* were intermediate in resistant profiles. *S. aureus* demonstrated the greatest change in 15 years, and WVUH data highlighted less resistant populations.

Conclusion: Although a wound is a potentially protected, ideal environment for resistant gene expression and transfer the evidence does not suggest any difference from other sites found in the human body.

Infection

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ESTABLISHING THE "CRITICAL RATIO" AS A MICROBIAL BIOMARKER FOR CHRONIC WOUND CLASSIFICATION/STATUS

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Aim: To evaluate a biofilm model assay, in comparison to a standard Kirby Bauer technique, on the efficacy of antimicrobials for use in the management of wound infections.

Methods: Aerobic prokaryotes and *Candida albicans* were provided by the clinical laboratories, West Virginia University (WVU) hospitals. 48 hour monospecies biofilms were created by using 30% Poloxamer F-127 at 35°C and a comparative 18 hour Kirby Bauer technique using Muller Hinton agar was simultaneously assayed. Six antibiotics (E-strip - High and Low Concentration) were applied to either method, utilizing antibiotics profiles of the WVU intensive care unit (ICU). The biofilm elimination concentration (BEC) and the minimum inhibitory concentration (MIC) were determined and a "critical ratio" established. Based on accumulated data over the past three years, a 3-part "break-point" scheme was proposed: ≤ 1 Biofilm phenotype limited, "responsive," >1 – <5, "indeterminate," and ≥5 biofilm phenotype dominate "unresponsive."

Results: The five featured isolated isolates included *Escherichia coli*, *Enterobacter cloacae*, *Pseudomonas aeruginosa*, *Enterococcus faecalis*, and *Staphlococcus aureus*. *E. faecalis* had the lowest ratio for all five antibiotics (<2) with *E. cloacae* the next lowest. *E. coli* had the highest ratio, >6. *S. aureus* had two of five drugs >5.

Conclusion: Chronic wound assessment, either clinically or microbiologically, is difficult. Here, we have linked a viable culture ratio to microbial phenotype and used it to classify wound colonization, which may correlate wound status and suggest optimum antibiotic and non-antibiotic therapy.

Infection

P 150

CONSERVATIVE MANAGEMENT OF INFECTED ABDOMINAL MESH

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Aim: A case series showing an alternative and often successful management option for patients with an infected abdominal mesh whom are high risk for surgical removal of mesh.

Methods: A retrospective analysis was performed of patients seen in the Wound Healing Clinic at the University Hospital of Wales in 2009. 8 patients were identified who had been referred with a history of mesh infection. These patients notes were then obtained for review of their management and progress.

Results: 5 male and 3 female patients were identified. All patients had undergone repair of incisional hernia with mesh. Age range 34-82 years old (median 75½ years old). 1 patient (12%) returned to theatre due following overwhelming infection. 7 of 8 patients (88%) were managed conservatively with intermittent antibiotics when clinically indicated, topical antimicrobials and excision of mesh as it was exposed to the surface. Of the conservatively managed patients, 2 (29%) fully healed and the 5 remainder are showing signs of healing with decrease in wound size, exudate and pain.

Conclusion: In an often elderly population with many medical comorbidities rendering them high risk a conservative approach is postulated to the infected abdominal mesh which contains infection and also successful wound healing.

P 151

EVALUATING A FOAM DRESSING IMPREGNATED WITH 0.5% POLYHEXAMETHYLENE BIGUANIDE (PHMB) IN THE MANAGEMENT OF INFECTED VASCULAR ULCERS

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Aim: Vascular ulcers frequently become infected due to the slow healing process, which allows a higher exposure to bacteria in the environment. This fact delays furthermore the healing process, causes pain and diminishes the quality of life of the patient. In some cases, where there is the lack of sensation caused by a diabetic neuropathy, patient consultation may be delayed due to late presentation of a wound in the foot in an advanced stage of infection.

To evaluate the efficiency of a new dressing in the management of infected or colonized wounds.

Methods: A study was carried out using a foam dressing impregnated with 0.5% PHMB, on patients with lower limb ulceration of venous and arterial aetiology. Swab culture and angiograms were performed before initiating the treatment, and the ankle-brachial pressure index was measured to confirm the leg ulcer diagnosis

The wounds were followed up for four weeks with the trial dressing in use.

Results: In all patients where the trial dressing was used, there was a reduction in contaminated tissue. As the bacterial load reduced, patients were reported to have a decrease in pain.

Where the dressing was used under compression therapy there was a vertical absorption of exudate, providing the protection of the per- wound skin.

Discussion: In this evaluation, the foam dressing impregnated with 0.5% PHMB was effective in reducing the signs and symptoms of infection.

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EFFECT OF SILVER DRESSINGS ON PSEUDOMONAS AERUGINOSA BIOFILM IN AN IN VITRO WOUND INFECTION MODEL

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Introduction: It is today well recognized that wound infection involves bacteria growing as biofilm. Pseudomonas aeruginosa is one of the most problematic wound pathogens and a well documented biofilm former. When studying the effect of antimicrobial products for wound treatment, biofilms need to be considered in the test model.

Aim: To study the effect of silver wound dressings on Pseudomonas aeruginosa growing as biofilm in a wound like environment.

Methods: Four different commercially available silver dressings were applied to established Pseudomonas aeruginosa (PAO1) biofilms growing in a three-dimensional collagen matrix in the presence of serum proteins. The antimicrobial effect of the same dressings was also studied in planktonic PAO1 cultures. The number of surviving colony forming units (CFU) was determined after incubation at 35°C for 24 hours by plate count. In both test models different concentrations of Ag2SO4 was used as silver control.

Results: The silver dressing with the highest silver concentration/release show best effect in both biofilm and planktonic PAO1 cultures, with a CFU reduction of at least 3 log units in the in vitro wound infection model and a 6 log unit reduction in the planktonic culture, after 24 h incubation. With Ag2SO4 controls, 25 ppm Ag+ was needed for a 4-5 log unit CFU reduction in the planktonic culture, in comparison to 400 ppm in the biofilm model.

Discussion/Conclusion: The present study demonstrates the need for relevant in vitro models, mimicking a wound environment, when testing the antimicrobial effect of different wound dressings.

Infection

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MANAGEMENT OF WOUND HEELING COMPLICATIONS AFTER TOTAL KNEE ARTHROPLASTY

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Introduction: Wound heeling complications after TKA (total knee arthroplasty) are getting more and more an increasing problem and endanger the implant. Predisposing factors are adipositas, diabetes mellitus and circulatory disorder. Fat necrosis as a result of contusion the soft tissue during operation, infection or local circulatory disorder seems to be the main cause of these wound heeling problems.

Method: 10 patients with wound heeling complications after TKA were treated with modern wound heeling products. All 10 patients had predisposing risk factors like diabetes mellitus or adipositas. To better the wound bed and to avoid huge further operations or a deep infect of the prostheses was targeted for this study. For wound bed conditioning honey was primary used as wound dressing following by kollagen dressings to close the wound.

Conclusion: In all 10 patients a complete wound heeling could be achieved. In one patient a secondary wound closing was necessary. A deep infect of the prostheses could not be seen after a follow up of 18 months. The average time to wound closure was 6 months.

Discussion: An accurate management of wound heeling complications after TKA is absolute necessary to avoid a deep infection of the prostheses with the consequence of further operations and increasing costs.

The management includes a sufficient wound management, continuous examinations, infect management and when indicated surgical interventions.

Infection

P 154

THE IN VITRO PERFORMANCE OF A NEW NON-ADHERENT SILVER ALGINATE DRESSING

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We have evaluated a new nonadherent silver alginate dressing and compared its performance with other commercially available silver dressings. In vitro methods were utilized to assess both the physical and antimicrobial properties of the dressing, simulating clinical in use over 7days.

An absorbent capacity test was used to assess the ability of the dressing to manage wound exudate over a 7day wear time and when used in combination with an appropriate secondary dressing. The availability of silver for antimicrobial efficacy was determined by measuring silver release from the wound dressing into simulated wound fluid, changed daily, and rechallenged for seven days, to emulate a heavily exudating wound. To confirm antimicrobial efficacy after this sevenday challenge, the dressing was tested against common chronic wound pathogens using a Log10 reduction assay. In addition, we developed a novel three-dimensional zone of inhibition method to further challenge its antimicrobial efficacy.

The new nonadherent silver alginate dressing in combination with a secondary dressing demonstrated excellent fluid handling over a seven-day wear time. In addition, silver release was retained over the 7day test period, after which the new nonadherent silver alginate dressing was still efficacious against common wound pathogens.

This in vitro study gives an improved insight into the suitability of a new nonadherent silver alginate dressing in the management of exudate and bacterial bioburden over a 7day wear time. Test conditions were based on those observed in infected chronic wounds suggesting that this new dressing could help in the management of these wounds.

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NEW GALENIC ANTISEPTIC SUBSTANCE CONTAINING KI3-COMPLEX AND HYALURON ACID FOR TREATMENT OF CHRONIC HARDLY HEALING WOUNDS

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The treatment of chronic non healing wounds poses a challenge in the daily practice. Regardless of the wound causing disease, which also has to be diagnozed and treated, a multitude of other reasons play an important role in the chronification of the wound. In this connection the local wound milieu is fundamental, especially the disaccord between local constructive and destructive processes, and the microbial load of the wound.

The special challenge is thereby the difficulty to identify the concrete complex of problems as well clinically as paraclinically.

In this regard active milieuinter- and broadacting antimicrobial preparations play a significant role. Such substances are, for example hyaluronic acid and PVP-iodine, which have been already applied successfully in the management of problematic wounds, but never before in a combination of administration and effect.

This paper describes the results of an Observer Study. In 49 patients with chronic non healing wounds with signs of chronic infection could stimulate wound healing. Especially Pseudomonas infection could treat successful without inhibition of wound healing.

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SUBCUTANOEUS OLECRANON AND PATELLAR SEPTIC BURSITIS. TOWARDS SHORTER DURATION OF ANTIBIOTIC ADMINISTRATION

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Objective: No evidence-based recommendations exist for the management of bursitis with or without concomitant subcutaneous and coetaneous infection. We examined epidemiology and risk factors for recurrence of septic bursitis.

Methods: Retrospective study of adult patients with infectious olecranon and patellar bursitis requiring hospitalization at Geneva University Hospitals.

Results: We identified 343 episodes of infectious bursitis (237 olecranon, 106 patellar). All received antibiotics for a median duration of 13 days with a median intravenous component of 3 days. Cure was achieved in 293 (85%) episodes. Total duration of antibiotic therapy (OR 0.9, 0.8-1.1) showed no association with cure. In multivariate analysis, only immunosuppression was linked to recurrence (odds ratio 5.6, 95%CI 1.9-18.4). Compared to ≤7 days, 8 to 14 days (OR 0.6, 0.1-2.9) or >14 days of antibiotic treatment (OR 0.9, 0.1-10.7) were equivalent, as was the intravenous component (OR 1.1, 1.0-1.3).

Conclusion: In severe infectious bursitis requiring hospitalization, adjuvant antibiotic therapy might be limited to seven days in non-immunosuppressed patients.

Infection

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BURULI ULCER: TRANSMISSION AND TREATMENT OF THE MYCOBACTERIUM ULCERANS INFECTION

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Materials: Buruli ulcer is a skin disease caused by the Mycolactone secreted by Mycobacterium Ulcerans. This tropical mycobacterium rages in an endemic manner: typically children younger than 15 years old that are nutritionally deficient and living far away from sanitary centers around aquatic ecosystems.

Methods: The methods of transmission of this disease are well-known. The lesions are polymorphic with numerous diagnostic differentials. Until 2004, treatment was essentially surgical. The World Initiative against Buruli Ulcer of the World Health Organization indicates the systematic use of a biantibiotherapy. Our experience in the Republic of the Ivory Coast shows the difficulty of sensitizing the affected populations.

Results: The transmission of the disease is directly or indirectly percutaneous through a vegetal biofilm from potential aquatic vectors. This indicates collective and individual preventative measures. The use of rifampicin with streptomycin avoids relapses and the appearance of resistance. This is a revolution in the treatment of the Buruli ulcer. The healing of lesions is precocious with the stabilization of the disease and lesion regression. The post-op sequelae of a potential secondary surgery are not as long and simpler.

Conclusions: Currently, the Buruli Ulcer is still diagnosed too late, causing significant costs to the patient both aesthetically and functionally. A better knowledge of mycobacterium uclerans as well as the development of rapid and non-intrusive tests are fundamental. The new therapeutic diagram recommended by the WHO must be widely applied.

Leg Ulcer

P 158

OPTICAL COHERENCE TOMOGRAPHIC (OCT) AND IMMUNOHISTOCHEMICAL EVALUATION OF LOWER LIMB WOUND REPAIR UNDER HONEY*

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Aim: Lower limb wound (LLW) healing is a prevailing challenge in medical practices. Perhaps natural honey offers some unique solutions but mechanism is still to be unveiled properly. Here, physico-chemical characterization of honey viz. honey* (Ih) and evaluation of its healing potential for LLW may be performed using non-invasive skin OCT and immunohistochemistry (IHC).

Methods: Present work analyses pH, electrical conductivity, viscosity and organic/inorganic contents including functional groups of Ih before topical application on traumatic LLW [subjects (n=32), of either sex, 10-60 yrs of age] as occlusive dressing. Besides clinical documentation (Fig.1), tissue repair has been evaluated by OCT, and IHC noted expression of healing markers in peripheral wound biopsies.

Results: Study revealed Newtonian flow behaviour and increase in electrical conductivity and pH of Ih with dilutions. Presence of fluorophores, amino acids, vitamins, bio-elements and different functional groups with healing implications also recorded. Under Ih based non-adherent dressing, the sustenance of favourable moist wound environment, chemical debridment and optimum granulation tissue formation are recorded with minimum post healing contracture in LLW. The epithelial integrity of restored wound bed has been depicted by OCT (Fig.2) while favourable expression of molecular markers in epithelium [viz. p63, E-cadherin (Figs.3 & 4)] and dermis [viz. I & III collagens (Figs.5 & 6)] of wound periphery on different post application days are noted.

Conclusion: Structural and molecular findings possibly throws light on the tissue repair efficacy of Ih in traumatic LLW healing.

* Indian

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TREATMENT OF LEG ULCERS WITH A NEW SOFT-ADHERENT FOAM DRESSING WITH TLC-NOSF (TECHNOLOGY LIPIDO-COLLOID WITH NANO-OLIGOSACCHARIDE FACTOR)

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Aim: Leg ulcers can become chronic and this is often due to an excess in the level of Matrix MetalloProteinase (MMPs). In this context, a large number of dressings are generally used with variable results. A new MMP inhibitor dressing is now available to rebalance the wound equilibrium in low to moderately exuding leg ulcers. This dressing is a soft-adherent foam dressing with TLC-NOSF (technology lipido-colloid with nano-oligosaccharide factor), a unique compound designed to inhibit MMPs and kick-start healing.

Methods: This poster presents three patients with leg ulcers. All three ulcers were longstanding in duration, and the patients presented with a number of co-morbidities: obesity, diabetes, arterial insufficiency. Wounds had been treated with a variety of foam dressings, but the wounds failed to heal. Treatment with a new soft-adherent foam dressing with TLC-NOSF was started.

Results: After 3 weeks treatment with the new soft-adherent foam dressing with TLC-NOSF, the wounds are significantly improving; pain was also noticed to decrease significantly in one of the patients. This case study is due to continue another 5 weeks.

Conclusions: These three case studies aim at showing the efficacy of the new soft-adherent foam dressing with TLC-NOSF in the treatment of leg ulcers.

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HEALING DISORDERS DURING THE COURSE OF CHEMOTHERAPY USING A TAXANE

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Aim: Use of a hydrocellular dressing containing nano oligosaccharide factor (NOSF), a proteinase inhibitor, in a 68 year-old patient with multiple morbidities presenting healing disorders on an iatrogenic ulcer and skin sclerosis during the course of chemotherapy.

Methods: The patient received conventional hormone therapy and chemotherapy with a taxane from October 2006 for bone metastases, along with complementary therapy with a biphosphonate from October 2007. He reported an increase in circumference and feeling of tenderness in the right calf and left forearm. Antibiotic treatment and local treatment with topical corticosteroids led to no change.

Oedema affecting both legs was observed. An iatrogenic ulcer developed.

This ulcer was treated with hydrocolloid dressings, ointment compresses and hydrocellular dressings. The ulceration continued to develop despite this treatment and chemotherapy had to be stopped, despite a good response from the patient. The ulcer nonetheless worsened and spread.

The ulcer has been being treated since 2008 with a NOSF hydrocellular dressing.

Results: An increase in granulation tissue and the beginning of epithelialisation could be observed on the ninth day. After three months, the distal part of the wound had already healed and the rest was 95% covered in well vascularised granulation tissue. After seven months of treatment, the skin is almost healed, with a coin-sized residual area of erosion.

Conclusions: After discontinuation of the taxane and the use of a NOSF hydrocellular dressing, a satisfactory result was obtained. The use of this dressing leading to almost complete healing of the ulcer.

Leg Ulcer

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DOES SIMPLIFYING DRESSING CHOICE FOR CHRONIC LEG ULCERS IMPROVE PATIENT OUTCOME

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Aim: To evaluate whether use of a simplified dressing regimen led to an improved patient outcome.

Method: Case study method was used to establish whether a simple dressing which effectively managed exudate led to an improvement in patient outcome in a small number of patients.

Case studies will be supported by photographs.

Results: Application of the dressing was simple which led to less practitioner variation. All ulcers improved with use of the dressing and peri wound area improved

Discussion: Whilst it is accepted that a moist environment is essential for wound healing, excessive exudate is destructive, and negatively affects quality of life for patients. Despite these ulcers being chronic and covering a large area, there was no requirement for antimicrobial or antibiotic supplementation.

Conclusion: By simplyfing the dressing regime, there is less opportunity for variation in practice and the care is more likely to be effective. Treating chronic leg ulcers can result in complex wound regimes which are time consuming and lead to inappropriate application of dressings. This may result in ineffective wound care or further damage to surrounding tissue.

This dressing proved to be effective with this small number of patients and improvement was noted in the ulcers and the surrounding skin.

(*) Sorbion Sana, Sorbion

Leg Ulcer

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SUCCESSFUL TREATMENT OF PYODERMA GANGRAENOSUM WITH INTRAVENOUS IMMUNOGLOBULINES DURING PREGNANCY

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Aim: Pyoderma gangraenosum is a painful, ulcerating skin disease of unknown aetiology. Diagnosis is generally based on clinical signs and histological examination is nonspecific. Associations with numerous systemic diseases have been described in the literature. Only occasionally, pyoderma gangraenosum during pregnancy has been observed. A wide range of treatments is utilized for this disease, but in pregnant patients the therapeutic options are limited.

Methods: We describe here the case of a 26-year old patient who presented at our department with a 4-months history of ulceration of the left lower leg. Examination of her left medial lower leg showed two deep ulcerated lesions with raised and undermined borders. One year ago, the diagnosis of pyoderma gangraenosum had been established and previous lesions had completely recovered under a treatment with methylprednisolone and dapsone. At the time of first admission to our department the patient was at 18 weeks of gestation with twins. Reapplication of dapsone was immediately stopped as soon as pregnancy was discovered at 5 weeks of gestation, 3 weeks after re-ulceration. Medication with methylprednisolone at a dosage of 1 mg/kg was without clear effect.

Results: After a total of three 3-day courses with intravenous immunoglobulines (0,5mg/kg per course) a significant re-epithelization of the ulcers could be achieved.

Conclusions: Application of intravenous immunoglobulines as effective treatment of pyoderma gangraenosum recalcitrant to standard therapies is increasingly performed. Due to the therapeutic challenge during pregnancy intravenous immunoglobulines represent a safe and effective treatment.

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TANTALUM-182 BRACHYTHERAPY-INDUCED MALIGNANT SKIN TUMOUR PRESENTING AS ULCER OF THE UPPER LEG

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Aim: Radiotherapy has consistently been considered as a latent inducer of malignant neoplasms. The effects of irradiation and its health risks have been investigated by data originated from studies on survivors of atomic bomb explosions, occupational and environmental studies, as well as medical radiation studies. Unusual methods like internal radiation with tantalum-182 wires have to be taken into consideration as potential inducers of malignancies when assessing ulcerations in irradiated skin.

Methods: We present a 44-year-old woman with a non-healing wound on the left thigh with a history of about 12 months. In 1969, a haemangioma of the left thigh had been treated with radiotherapy, i.e. by interstitial brachytherapy with radioactive tantalum-182. On admission to our department, physical examination revealed an ulcer of the distal front of the left thigh, which was 1 x 2 cm in size with a red, irregular margin. The remaining skin of the ventral thigh displayed teleangiectasia in two vertical streaks of 2 x 10 cm with 9 punctiform scars on former injection sites, respectively.

Results: Multiple biopsy specimens were obtained from the ulcer showing keratinocytic tumour cell associations with atypic nuclei. Given the morphology of the ulcer and the histological findings the diagnosis of squamous cell carcinoma was established. Additional biopsies from the other scarred areas showed a chronic radiodermatitis, but no malignant transformation.

Conclusions: A high level of suspicion in early detection of malignant changes in irradiated skin is important whenever alterations like ulcers arise decades after radiotherapy.

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IMPROVED GRANULATION RATE AND WOUND REDUCTION IN LONG STANDING HARD TO HEAL LOWER LEG ULCERS TREATED WITH CHARGED POLYSTYRENE MICROSPHERES: A PROSPECTIVE GERMAN MULTICENTER DATA COLLECTION STUDY

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[4]*Medizinisches Versorgungszentrum (Blaustein, Germany)*

Aim: To evaluate a new treatment modality using Charged Polystyrene Microspheres (CPM) for the treatment of recalcitrant wounds among German wound specialists.

Material and Methods: A Post Marketing Surveillance Study was undertaken using CPM in the treatment of chronic wounds that failed to progress in the hands of treating wound specialist. Twenty four outpatients were treated with CPM twice daily for 6 weeks. Photos and acetates were completed weekly to monitor granulation and wound size reduction. A physician satisfaction survey was taken at each weekly visit.

Results: 24 patients in four centers completed the 6 weeks of therapy. The wounds were predominantly were venous ulcers (75%). The average wound size was 20 cm, and the average wound duration was 6 years. After the 6 week treatment period, 61% of the wounds had achieved >75% granulation coverage and the surface area was reduced by an average of 25% (p=0.004). Physicians were satisfied or very satisfied with the response to the treatment in 68% of the patients. No serious adverse events were reported.

Conclusions: Treatment with CPM was found to be safe and effective in promoting granulation and reducing wound size in chronic lower extremity wounds.

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THE USE OF AN INNOVATIVE GELLING FOAM* IN PATIENTS WITH LEG ULCERS – CLINICAL EXPERIENCE

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This study was aimed to evaluate the safety and performance of a gelling foam* used in patients treated at the community health facilities. This innovative development is intended for use in patient who suffers from delayed healing wounds with moderately to highly amounts of exudates.

Method: The clinical performance of the gelling foam* was studied for six weeks in 11 patients with moderately to highly exuding delayed-healing venous leg ulcers. Healing was assessed on a weekly basis with reference to the wound-bed tissue composition, degree of odor and pain, dressing performance and the dressing's effect on the peri-ulcer area.

9 out of 11 patients completed the study. One ulcer healed and no wound infections occurred during the study period. A mean of 56% reduction in ulcer area (from 15.6 to 6.9 cm) was recorded during the six weeks, and there was a mean of 25% reduction in granulation tissue from dull to healthy after one week. Wound odor diminished significantly after one week. Mean dressing wear time was 3.1 days, and there were only minimal incidences of leakage.

Conclusion: The gelling foam* was found to be safe and performed well when used in the treatment of delayed-healing chronic venous leg ulcers

* Versiva xc

Leg Ulcer

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EFFECT OF PERIWOUND SKIN PROTECTION ON WOUND HEALING: RESULTS OF A RANDOMIZED CLINICAL TRIAL IN VENOUS LEG ULCERS

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[6]*Cap Pare claret (Barcelona, Spain)*
[7]*Hospital Clinico (Madrid, Spain)*

Aim: Although compression therapy is the mainstay of treatment for venous leg ulcers, there is still opportunity to improve healing rates especially through better wound care and improved compliance. This study investigates the protective effect of a widely prescribed in wound care no sting barrier film* on the periwound skin of venous leg ulcer patients by measuring the rate of ulcer area reduction under compression therapy.

Methods: A total of 98 patients (32 male and 66 female, average age - 74 years) with venous leg ulcers (mean ulcer duration - 46 weeks) were recruited in a multicenter randomized controlled clinical trial. All patients received standard treatment with 2-layer compression bandage # above an absorbent foam dressing. Patients were randomly allocated to 2 groups: 49 patients received periwound protection using the no sting barri

Discussion: These results show that protection of periwound skin from external factors is an er film and 49 controls had no specific treatment for their periwound skin. Planimetric measurement of ulcer area was performed weekly. Treatment was assessed at 12 weeks.

Results: At the end of the study, the average reduction in ulcer area was statistically greater in patients treated with the no sting barrier film (83%) than in the control group (72%) ($p = 0.046$). effective way to accelerate the healing rate of venous leg ulcers treated with effective compression.

*Cavilon NSBF (3M, St. Paul, MN)
#Coban 2-Layer Compression System (3M, St. Paul, MN)

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NEGATIVE PRESSURE THERAPY AND BANDAGING IN VENOUS LEG ULCERS

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Introduction: Compression is the gold standard in venous leg ulcers treatment. Negative pressure therapy (TNP) can be considered an adjuvant device in the management of venous leg ulcers.

The aim of our study was to demonstrate that the negative pressure applied by vacuum device was not influenced by bandaging compression.

Materials and Methods: We included 5 voluntary healthy subjects. We applied on the left leg of each patient the polyurethane foam connected to a suction source by a pad attached to a drainage tube and a short stretch bandaging over and on the right leg the bandaging alone. In order to measure the pressure we put, under the foam on the left leg and under the bandaging on the right leg, the sub-bandage pressure measuring device* device which is able to check the subbandage pressure. We took three measurements on the left leg, before and after negative pressure development without bandaging and after negative pressure creation with bandaging. A permanent negative pressure of -125 mmHg was exerted. We took one measurement on the right leg after bandaging.

Results: All patients showed on the left leg: Pressure (P) = 0 mmHg before negative pressure development without bandaging, P = -125 mmHg after negative pressure creation before bandaging positioning and the same pressure (P= - 125 mmHg) after bandaging. The measurements took on the right leg after bandaging showed a pressure included in a range from 50 to 60 mmHg.

Conclusion: Our study demonstrated that negative pressure developed by a vacuum device is not influenced by compression bandaging.

*Kikuhime®

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AN IMPORTANT HEALTH RESORCE IN THE PRIMARY CARE SETTING: THE LEG ULCERS UNIT

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Aim: To promote a specific unit for treating patients with vascular disease and diabetic foot wounds in the primary care setting (Pare Claret center, Barcelona), because Chronic wounds are characterized by their high prevalence, costs and the incapacitation for the activities of the daily life of our patients.

Methods: A specific protocol for assessment, diagnosis and treatment of vascular disease was performed and a guideline to refere from the primary care setting to the vascular surgery department of our reference hospital. The referral criteria was established in a workshop document. A general practitioner and three nurses work in the unit at part-time.

Results: 132 patients were referred. 77 patients presented leg ulcers, 19 were treatment at home. The description of the ulcers lesions were: 57 from venous leg ulcers, 10 arterial disease and 10 diabetic foot. Were discharged 67 patients with wound healing. 10 patients were refeared Vascular surgery department, 3 presented intermittent claudication, 2 several ischemia and 2 with affected bones.

Conclusions: The workshop performed and the consensor document for treating vascular ulcer in the primary setting and the guideline referring to the vascular department permeated a higher efficacy in the management of the ulcer disease has helped to raise the effectiveness in the treatment application, reducing injuries healing time, the demand for medical care and the figures of healthcare resources.

Leg Ulcer

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HOLISTIC EFFECTS OF POLARIZED LIGHT (480-3400NM) IN THE TREATMENT OF CHRONIC WOUNDS: DIRECT AND INDIRECT BENEFIT

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Aim: Asses direct and indirect benefits for individual and society after appliance polarized light (480-3400nm) in the treatment of Chronic wounds.

Materials / Methods: We treated 50 patients with polarized light (480-3400nm) once a day for eight minutes on the distance of 10 cm from skin surface. Energy density is 2,4J/cm^2 for minute and power density is 40mW/cm^2. For topic therapy we used hydrobalance dressing.

Results: Polarized light (480-3400nm) has a stimulatory effect on healing. Acceleration of wound closure. Stimulation of body defense mecanisms with general bactericidal and antitumor effects. Reduction of pain transmission by direct action and peripheral nerves.

Conclusion: Polarized light (480-3400nm) is suplemntar therapy in the treatment of chronic wounds and it is: simple, non invasive therapy, with biostimulative effects, without unwished effects.

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RELATIONSHIP BETWEEN THE SEASONAL ONSET OF CHRONIC VENOUS LEG ULCERS AND CLIMATIC FACTORS

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Background: Some previous reports have indicated seasonal differences in the onset of chronic leg ulcers, but the reasons for the seasonal fluctuations are still not clear. Therefore we assessed the seasonal incidence of chronic leg ulcer and the correlations between those and climatic factors.

Methods: Up to now we retrospectively analyzed the data of 167 patients with chronic leg ulcers. We evaluated the monthly and seasonal onset of the leg ulcers and investigated correlations among the incidence and climatic factors.

Results: The onset of chronic leg ulcers showed significant seasonal fluctuations with a decreased in summer and an increased in autumn-winter. We were able to find a maximal incidence in 22 (13.2%) patients in January and a minimal incidence in 6 (3.6%) patients in July. With a mean of 3.4°C January was the coldest and July with a mean of 19.2°C the hottest of all months. Consequently we objectified a significant inverse relation between the monthly number of cases of leg ulcer onset and the mean temperatures.

Conclusion: We found that the onset of chronic leg ulcers caused by chronic venous insufficiency, mixed arterial and venous disorder or lymphoedema with CVI shows seasonal differences and demonstrate an inverse relationship to temperature. Summing up climatic factors may play an important role in the onset of chronic leg ulcers. Therefore it could be important to consider this aspect in further clinical investigations and prophylactic therapeutic strategies.

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COMPRESSION THERAPY FOR MIXED VENOUS ARTERIAL DISEASE

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Introduction: Venous ulceration can be complicated by underlying pathologies with arterial impairment being recognised as a complex cause (Moffatt et al 2004). This presents challenges for practitioners to employ safe practice whilst providing healing solutions for patients with mixed venous arterial disease. Guidelines advocate the use of compression for patients with Doppler readings of >0.8 when applied by generalist practitioners. (EWMA 2003).

Aim: This poster will discuss results with cohesive inelastic bandaging by a specialist complex wound service under strict regulation with nurse and consultant collaboration.

Methods: The audit in 2005 showed that patients had been inappropriately treated with inadequate compression. Reduced elastic compression sometimes caused pain at night and did not apply sufficient pressure to address venous incompetence. (Partsch 2006)

Studies that highlighted the safety and efficacy of inelastic compression (Hofman 1999) reassured the team of the implantation of cohesive inelastic bandages for these patients.

In the last 5 years more comprehensive assessment methods and specialist nursing intervention with consultant input have led to a change in practice.

Results: The service now treats complex wounds, there is a clear referral pathway and treatment recommendations.

400 telephone advice calls monthly

Mixed venous arterial diseased patients with full assessment are treated safely with cohesive inelastic compression to manage the venous component

Conclusion: Patients who would not normally be treated with compression are now managed safely and effectively under supervision and mandatory training by the specialist team

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REPRODUCIBILITY OF SUB-BANDAGE RESTING AND WORKING PRESSURES WHEN REDUCED PRESSURE IS REQUIRED (ABPI < 0.8)

Jan Schuren[1].

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Aim: To evaluate the reproducibility of sub-bandage resting and working pressures in routinely used systems for patients with ABPI's below 0.8 and a newly developed system on an artificial leg.

Methods: An artificial leg was equipped with pressure transducers in such a way that resting and working pressures could be recorded at three levels with different circumferences. Ten experienced wound care nurses from the Netherlands were invited to apply three times their routinely used system to this leg. Next they were introduced to a new system, developed to be applied at full stretch and to provide reduced sub-bandage resting pressures*. Also this system was applied three times.

Results: The reproducibility of sub-bandage pressures for each individual nurse was significantly better for the new system when compared to routinely used methods (resting pressure: p=<0.001; working pressure: p<0.001).The evaluation of nurse-to-nurse differences revealed that differences between the pressures were significantly less with the new system (resting pressure: p=<0.001; working pressure: p<0.001). Finally, the evaluation revealed that the working pressures of all applications (n=60) were significantly higher with the new system (p<0.001).

Conclusion: For experienced nurses, it is easier to reproduce sub-bandage resting pressures during subsequent applications with the new compression system, when compared to routinely used systems for patients with ABPI's <0.8. In addition, the working pressures, which indicate effectiveness, are higher with the new system.

* 3M™ Coban™ 2 Lite Compression System

Leg Ulcer

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COMPARATIVE STUDY BETWEEN 2 SHORT STRETCH COMPRESSION SYSTEMS

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Aim: Comparative study between 2 similar short stretch compression systems to compare the patient's comfort and wound healing ratio.

Methods: 6 weeks comparative study, 10 patients. Each compression system counting 5 patients. Patients selection according to specific inclusion and exclusion criteria. Method: objective measurements and actions. An oral questionnaire pinpoints subjective and individual perception in relation to the wearing of the compression systems.

Results: The comfort related issues in proportion to the overall costs should be considered as primordial findings in this study above the wound healing ratio. After 6 weeks 74% of the one population and 88% of the other population was healed. In general 6 out of the 10 patients were completely healed, the other 4 had a significant wound surface reduction of at least 50%. Another striking finding was the significant edema reduction in both systems. In general patients were very satisfied with both systems; compliance was good to very good on most of the comfort related issues, with a slight statistically non significant advantage for one system in relation to most of the comfort related matters. There was a clear statistically significant benefit for this system in correlation to the ability to wear normal footwear.

Conclusions: Both systems generate outstanding results, as well on a comfort related level as on a healing ratio related level. In both cases there is a slight advantage for one system, but with on the other hand a considerable higher cost involved.

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DEVELOPMENT OF AN ALGORITHM AS AN IMPLEMENTATION MODEL FOR A NEW COMPRESSION SYSTEM IN THE UK

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Significant advances have been made in the delivery of effective services for patients with leg ulceration and compression (RCN 2006). Following the successful implementation of a new 2-Layer bandage across a UK Primary Care Trust (PCT) an algorithm has been developed of this strategic model for national implementation.

Method: The PCT has a proactive approach to accredited education allowing for further development of knowledge and clinical skills ensuring safe implementation.

Agreement for:
- Introductory education for the new 2-Layer bandage.
- Cascade of and on-going training be provided throughout the primary care organisation.
- The development of bespoke education and educational support materials and supplied to all staff.
- The development of bespoke patient information leaflets.
- On-line resources via dedicated website
- The development and monitoring of competency whilst maintaining database of all staff trained and competent
- Audit to demonstrate safe implementation, patient outcomes and satisfaction and most importantly cost efficacy

Results: The audit results clearly demonstrated the satisfaction and effectiveness of bespoke education materials, presentations and patient tools, clinical demonstrations and competency framework databases. This approach highlighted the importance of a partnership agreement between the PCT and manufacturer with a proven strategy for safe and effective implementation. The clinical benefits of the 2 – Layer bandage in terms of patient outcomes and financial considerations have also contributed to this decision-making.

Reference
Royal College of Nursing. Clinical practice guidelines. The nursing management of patients with venous leg ulcers. 2nd ed. London: RCN, 2006.

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HYPERBARIC OXYGENATION AS AN ADJUVANT THERAPY IN TREATMENT OF COMPLICATED VENOUS LEG ULCERS

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Aim: The aim of the study was to evaluate effects of hyperbaric oxygenation (HBO) as an adjuvant therapy in treatment of chronic venous leg ulcers.

Material and Methods: Hyperbaric oxygenation (HBO) is breathing of 100% oxygen under environmental pressure greater than 1.0 ATA. We evaluated 20 patients (16 women and 4 men) with chronic venous leg ulcers who already underwent different therapeutic modalities. All ulcers were infected and covered with necrotic and fibrin tissue. All patients had twenty treatments in monoplace hyperbaric chambers. Wounds were debrided and dressed on third day averagely.

Results: An average time of follow up was 14 months. All patients were prepared for compression bandaging. HBO reduces edema of the lower leg, improves general condition and enhances effects of antibiotics.

Conclusion: Hyperbaric oxygenation is a safe adjuvant treatment of this complex both medical and social condition.

Discussion: To apply compression bandaging sometimes it is necessary to prepare the wound bed first. According to our results, we strongly believe that hyperbaric oxygenation is a therapy for such a task.

Key words: Hyperbaric oxygenation, chronic venous leg ulcers.

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MEASUREMENT OF CELL-MEDIATED IMMUNITY IN PATIENTS WITH AND WITHOUT VENOUS LEG ULCERS

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Aim: The role of cell-mediated immunity in venous leg ulcer healing is poorly examined. We aimed to measure delayed hypersensitivity determined with Mantoux test in unilateral venous-origin leg ulcer patients and in control probands.

Methods: Mantoux test was performed in each extremity in both groups and was repeated 12 months after first examination among patients. 72 h after test administration the diameter of raised induration was measured with a ruler. Both groups were screened for common laboratory values and BMI. Ulcer size, leg volume were also determined in patient group in a repeated fashion.

Results: There was no statistical difference in the diameters of tuberculin induration between affacted and non-affected legs or affected legs and arms within patient group. Delayed hypersensitivity appeared to be considerably stronger in control group compared to leg ulcer patients ($p<0.05$).

Conclusion: Weaker cell-mediated immunity may also lead to delayed healing of venous-origin chronic wounds.

Leg Ulcer

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A PROSPECTIVE, NON-COMPARATIVE, CLINICAL EVALUATION TO DETERMINE THE EFFECT OF A NEW NON-ADHESIVE ABSORBENT ANTI-MICROBIAL HYDROCELLULAR DRESSING CONTAINING SILVER SULFADIAZINE (SSD)* ON THE REDUCTION OF BIOBURDEN AND CLOSURE OF VENOUS LEG ULCERS

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Introduction: Infected venous stasis ulcers represent a significant subset of the hard to heal venous stasis population. In this population our primary objective is to assess the percentage of patients with high bacterial burden wounds achieving reduction in total bioburden from ≥105 cfu/g to <105 cfu/g tissue. Secondary objectives reduction in; Bioburden; Ulcer area and Clinical signs of infection (CSI)

Methods: Single centre study. VLUs >4 cm^2, >4 week old, low/moderate exudate, ≥1 CSI and ≥105 cfu/g tissue. Wounds assessed weekly with biopsies at weeks 0, 2, 4 & 8.

Results: 24 evaluable patients recruited.
- Median ulcer duration = 47.7 weeks
- Median ulcer area = 12.3 cm^2
- Median bioburden = 5.5 log10 cfu/g

Outcomes
- 13/24 (54.2%) patients achieved <105 cfu/g tissue after 8 weeks (95% CI: 33.9% - 74.5%)
- Reduction in bacterial load (log count) after 8 weeks ($p<0.001$)
- median reduction = 0.7 log10 cfu/g tissue, mean reduction = 2.2 log10 cfu/g tissue
- Reduction in percentage of patients showing any CSI after 4 weeks ($p=0.033$) and reduction in number of CSI present after 2 weeks ($p<0.001$)
- 11/24 (45.8%) ulcers closed after 12 weeks
- Significant evidence of a reduction in ulcer area ($p<0.001$, median=96.9%, mean=82.5%)

Conclusions: With this therapy venous leg ulcer patients, demonstrated significant evidence of reduction in bacterial bioburden, ulcer area and clinical signs of infection in colonised VLU wounds.

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CHRONIC LEG ULCER-ADVANCED TISSUE REPLACEMENT POSSIBILITIES

Srecko Budi[1], Rado Žic[1], Franjo Rudman[1], Zlako Vlajčić[1], Rudolf Milanović[1], Krešimir Martić[1], Zdenko Stanec[1].

[1]*Department of Plastic, Reconstructive and Aesthetic Surgery, University Hospital Dubrava (Zagreb, Croatia)*

The leading causes of chronic leg ulcers are chronic venous insufficiency and peripheral arterial disease. Chronic venous insufficiency is based on superfitial or deep venous system dysfunction with valvular incompetency. Peripheral arterial disease is obstructive arterial disease of lower extremities reducing normal arterial flow. Both, chronic venous insufficiency and peripheral arterial disease have functional derangements realated to chronic ulcer formation.

Understanding of ulcer formation pathophysiology is basement for appropriate tretament and healing. Atraumatic stripping of superficial vein and microphlebectomy is a standard treatment for superficial venous insufficiency followed by endovenous radiofrequency ablation (RFA), endovenous laser ablation treatment (EVLT) and subfascial endovascular perforator stripping (SEPS). A significant patency rate of revascularized arteries can be acheeved by good selection of suprainguinal and infrainguinal revascularisation modalities. With all the diagnostic modalities avaliable, a good patient selection for the appripriate surgical treatment can be undertaken, considering a host of knowledgeable reconstructive possibilities that follow after adequate surgical debridement. These include split thickness skin graft, local fasciocutaneous and muscle flaps, and fasciocutaneous, cutaneous and muscle free flaps as well. Other modalities of treatment include topical negative pressure treatments, special dressings, hyperbaric oxygen therapy and advanced tissue replacement possibilities.

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DECISION TREE FOR MULTIDISCIPLINARY CARE OF LEG ULCERS

Michèle Dumon[1].

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Aim: The French Hospital, Patient, Health law allows medical and paramedical professionals gathered in an office and medical center to complete projects testifying a coordinated and protocolled practice. Leg ulcer treatment is an example of this care. This decision tree is designed for the general practitioner-private duty nurse partnership.

Method: Synthetic analysis of recommendations from the Haute Autorité de Santé [French National Authority for Health] and good practice recommendations.

Results: The decision tree has 4 parts:

Part 1 «Initial medical consultation». The clinical examination practiced by the general practitioner is targeted on comorbidities and etiological research.

Part 2 «Initial nurse care». During a nurse consultation, which reveals their regulatory role, the nurse examines the wound and starts the follow-up file.

Part 3 «Second medical consultation». After receiving the results of supplementary exams and the nurse file; the etiological treatment is discussed.

Part 4 «Nurse care». During treatment sessions the wound examination is done by the nurse who inspects it using measurements, photos and descriptions. The "Leg ulcer follow-up" related file of the shared file is filled in by the nurse and given to the patient.

Conclusions: The multidisciplinary care of leg ulcers has improved greatly in the ambulatory sector since it displays a coordinated and protocolled care where each person says what they do, does what they say and documents what they did.

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A RANDOMIZED CONTROLLED TRIAL TO EVALUATE DIFFERENT TREATMENT REGIMES WITH TOPICAL WOUND OXYGEN ON CHRONIC WOUNDS

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[2]*AOTI Ltd. (Galway, Ireland)*

Introduction: Chronic wounds on the lower leg and foot are frequent, difficult to treat and show high rates of complications. After very positive results with a unique pressurized topical wound oxygen* device in other studies we investigated whether 4 weeks of topical wound oxygen* treatment and consecutive 8 weeks of advanced moist wound treatment (AMWT) is equally effective in healing chronic wounds as continuous treatment with topical wound oxygen*.

Methods: The randomized, controlled study was conducted at the National Wound Institute in Santiago de Chile. In an outpatient setting with patients with severe diabetic foot ulcers (DFU) (n=20) and chronic venous ulcers (CVU) (n=20) all patients received topical wound oxygen* for a period of one month. Then the groups were randomized to continue with topical wound oxygen* (two-two group) or receive AMWT for 2 more month (two-AMWT group). topical wound oxygen* patients were treated daily for 2 hours 5 times a week. The device delivered humidified medical grade oxygen with pressure cycles between 5 and 50 mbar. Dressing changes in the control group were performed according to best practice at a minimum of twice a week. The primary endpoint was complete ulcer closure after 90 days.

Results: The majority (82%) of the patients were referred to the study center for minor or major amputation. All of these patients improved under the therapy and no patient underwent amputation. Patients were comparable concerning age, size of the wound and duration of the wound. 90% of the DFU patients in the two-two group healed within 90 days vs. 40% in the two-AMWT group. Patients with CVU had 50% healing vs. 30%, respectively.

Conclusions: Patients with complicated ulcers benefit from the treatment of topical localized oxygen*. Continuous topical wound oxygen* treatments for 12 weeks showed significant better outcomes than a shorter topical wound oxygen* treatment regime of 4 weeks followed by AMWT.

*TWO2

Leg Ulcer

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CHRONIC WOUND AT INTRAVENOUS DRUG USERS (IDUS) – CONTINUED PROSPECTIVE SURVEY

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During 2009 year we were examined 19 intravenous drug users (IDUs) with range of different vascular failures,including hypotension, tachycardia, venous thrombosis, chronic wounds (CW), cellulitis. The focus of our prospective survey were characteristics of CW at IDUs.

We tested 11 male and 8 female IDUs, mid age 24.5 (16-39) by clinic, laboratory and color duplex scan (CDS) examination. IDU of heroin is the typical way of drug intake, with politoxic manner and long period of narcotics use (5-25 yrs).

We found a chronic infective wound n= 18, opene abscess n=3, post thrombotic wound, n=2, on the leg, 15 vs. 8 at the arm. CDS detected two cases of deep venous thrombosis (DVT), one recidivante. Bacterial species isolated: Citrobacter spp. 1, Pseudom. aerug. +MRSA 1, Staphyl. aureus 9, Staphyl. epididimis, sterile isolate 5.

The first study a vascular complication among IDUs was conducted during 2000-2004 and present the first target analysis of vascular pathology at IDU s in Serbia (J. Delic, M. Delic, Vascular Complication Among IDUs, 2005, EADV World Congress, London). Vascular complication are a consequence of mechanic, chemical and toxic effects of the narcotics, repetitive nids and inoculation of the germs.

IDUs is a new etiological factor for CW at young population. Postthrombotic wound is usually a consequence of hereditary thrombophlia at young population. There is a need for focused exploration of the cardiovascular complications at IDUs.

Key words: Chronic wound, IDUs

Leg Ulcer

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TREATMENT OF A PATIENT WITH HARD-TO-HEAL LEG ULCERS

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The morbid obese (141 Kg/ 1,58m) 56-years old male has multiple pathologies: hypertension, diabetes melitus type 2, renal failure (dyalisis since 2007), dyslipidemia, sleap apnea, chronic venous insufficiency, elephantiasis, right inguinal hérnia and Pick Wick Syndrome. Since 1999 he has had multiple hospitalisations for e.g. dyspnoea, erysipelas and cellulitis. In 2009 his weight was 141 kg and he received a gastric balloon, now (01/2010) his weight is 105 kg.

Aim: Attending to his multiple pathologies, reducing the oedema in his legs attempting to close the large ulcers, improving his quality of life.

Methods: After various local treatments have been attempted, treatment was started in December 2008 as follows: The wounds were cleansed with saline and covered with a hydroBalance* dressing + polihexanide (PHMB), after which a short stretch bandages** system with a foam under padding layer were applied. In February 2009 the oedema was reduced to a minimum and the ulcers were markedly smaller. Compression maintenance was now performed with a compression*** stocking.

Results: After 2 months of treatment with the dressing* + PHMB, the ulcers were much smaller and the oedema had reduced to a level where compression stockings could be applied. The patient was walking regularly which was of benefit for his overall condition.

Conclusion: Good adherence to the treatment lead to ulcer closure, improving the patients quality of life.

* Suprasorb X + PHMB, ** Rosidal Sys, *** Rosidal Móbil, Lohmann & Rauscher GmbH

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VALIDATION OF A PRESSURE ULCER RISK EVALUATION SCALE IN ONCOLOGY

Fromantin Isabelle[1], Falcou Marie Christine[1], Lala Hamid[1], Petot Corine[1], Mazerat Renée[1], Jaouen Catherine[1], De Rycke Yann[1].

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The most widely used pressure ulcer risk evaluation scales were validated in the 1980s in geriatrics. During the pressure ulcer consensus conference (Paris, Nov. 01), experts proposed the creation of specific tools for other types of populations presenting potentially different risk factors. The authors therefore developed the PUSO (Pressure Ulcer Scale in Oncology) in cancer patients presenting various sites and various stages.

The authors conducted 3 prevalence surveys in 2002 (351 patients) comparing the Waterloo and Norton scales. The Waterloo scale was excluded as it is poorly adapted to oncology.

This study led to the creation of the PUSO based on logistic analysis; 3 items were selected as being predictive of the development of pressure ulcers: mobility, incontinence and humidity/shearing; preventive measures must be implemented whenever any of these factors is identified (score ≥ 1). This score was validated by another prevalence survey (127 patients) in 2005.

In 2009, the Braden and PUSO scales were compared in 2 cancer centres (582 patients) and the PUSO was revalidated and shown to have a higher sensitivity: Braden Se: 76% [56-91], PUSO Se: 100% [87-100], Braden Sp: 86% [79-86], PUSO Sp: 63% [58-68].

The PUSO is a simple and reliable tool which could facilitate systematic evaluation of each patient's risk and allow rapid introduction of appropriate measures.

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CONSERVATIVE TEATMENT OF AN ABSCESS-FORMING SACRAL DECUBIUTS WITH EXTENSIVE CAVITATION

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Introduction: The estimated prevalence of sacral decubitus is 1%, affecting mainly elderly and bedridden patients. Inpatient treatment requires an average 46 days of hospital stay with costs ranging from 4000 to 96000 Euros. According to the severity of the decubitus, different treatment modalities apply.

Methods: We describe the case of a 77-year old paraplegic patient with multiple sclerosis, in whom we successfully treated an abscess-forming sacral decubitus with an expanding wound filler* with highly absorbent, tearresistant and effective cleansing properties followed by secondary wound closure.

Results: Our patient suffered from a 4x3 cm measuring skin perforation with an abscess cavity of 15x20 cm size. Systemic antibiotic therapy and daily rinsing using easyflow drains was initiated. We decided against radical debridement as the patient had a history of unsuccessful local flap coverage and extensive subsequent soft tissue loss, the coverage of which would ultimately have required complicated plastic surgery. We instead filled the cavity with several tear-resistant pieces of foamed material containing silver, which could easily be changed once to twice daily, without leaving any residues. After one week topic silver nitrate treatment of the skin edges ensued, followed by secondary wound closure with drainage insertion. Stitch removal was performed after three weeks and good clinical wound healing.

Conclusion: Using topical wound conditioning followed by secondary skin closure, a soft tissue sparing approach could successfully be performed in this patient with extensive abscess-forming sacral decubitus.

* Polymem silver rope

Pressure Ulcer

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SURGICAL TREATMENT OF PRESSURE ULCERS

Karin Marion Dorsche[1].

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Aim: Pressure sores are a major problem for patients as well as society at large. Immobilised patients are especially at risk. This group of patients with pressure sores should be hospitalised with the purpose of surgical revision of the wound and reconstruction using a flap. This kind of surgery demands a long postoperative relief of the flap. University Centre for Wound Healing at Odense University Hospital has tested the effects of a shortening of the formerly recommended period of 3 weeks relief to 2 weeks.

Methods: In this article we report the results covering all patients that have undergone surgery and reconstruction of pressure sores during the period from 1st October 2001 to 1st November 2008. The results are divided in two periods covering the period before and the period following the shorter relief period. A total of 80 patients were distributed with 34 in the first period and 46 in the second period.

Results: A considerable reduction in median length of stay from 38 to 27 days. No increase in surgical frequency or complications frequency. Share of fully healed by discharge unaltered.

Conclusion: We believe that there is no risk in shortening the immobile postoperative relief phase following reconstruction of pressure wounds with immobilised patients.

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AN EVALUATION OF A FRICTION/SHEAR REDUCING MATERIAL ON PATIENTS AT RISK OF PRESSURE ULCERATION IN A DISTRICT GENERAL HOSPITAL

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Aim: Pressure, shearing and friction are traditionally cited as the three major forces applied to the skin which will cause skin breakdown. A high-density weave material* has been designed to reduce the 'stiction' or force needed to overcome inertia in a patient who needs to move. Previous work showed that these garments can reduce or heal the symptoms of pre-existing skin breakdown. It was decided to undertake an evaluation using these products in a district general hospital to see if it reduced or prevented pressure ulceration occurring.

Methods: Three wards in a district general hospital (two medical and one orthopaedic) were equipped with the high-density weave products - bootees and undergarments - for patients who were immobile and at high to very high risk according to the Waterlow risk scoring system (Waterlow 15 or more).

Results: The rate of pressure ulcer incidence and prevalence was compared between a three month period prior to the introduction of the products and the three month period post introduction of the high-density weave products. The incidence data is currently awaiting analysis. The prevalence data initially suggests a reduction in pressure ulcer occurrence in patients who were not previously admitted with ulceration.

Conclusions: This evaluation was designed to see if the products reduced pressure ulceration occurrence in patients at risk, whether it was cost-effective for the trust and should be recommended for trust-wide implementation, and whether, as a wider intervention, it would be of value across the NHS in general.

*Parafricta™

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A PRATICAL TOOL* FOR PRESSURE ULCER PREVENTION

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Aim: The prevention of pressure ulcers has become more and more the paramount of the concern in the policies of healthcare professionals, related with pressure ulcers. However, mostly, the absence of sustained integrated measures has lead to increased costs without great incomes considered cost-effectives by the Boards, as well as the healthcare professionals mostly seemed confused in the implementation of guidelines, locals or nationals, difficult to implement.

This way, an acronym* was constructed, related to preventive measures for pressure ulcers, based on an extensive review literature and now implemented in a hospital with 200 beds, the tool was evaluated efficacy in practice and in cost-effectiveness. However, these acronyms is wide spread and free to use and seems to be very well accepted by healthcare professionals, leading to better care and better results.

Methods: The method used was an extensive literature research about all the main problems associated with pressure ulcer prevention and identified by the acronym*, which were defined by: **I**mplementation of a risk assessment tool
Maintain the skin clean and hydrated
Protection of the areas from pressure and shear
Reposition with frequency and adequate to level of risk
Education to patient and relatives
Support surfaces in bed and chair
Sensibility affected, attention in double
Assessment for nutrition risk
Once a day skin inspection

Results: This tool enables the healthcare professionals to become more practical in the implementation of preventive measures, beside of the clinical judge of thinking when looking at a patient “I´ve got the feeling this patient his going to develop a pressure ulcer”. For once, they have a tool that allows them to implement a mini plan of care that can be followed by all in the ward, hospital, or national wide. This tool was build as a theoretical model, but has been tested in practice, either in a practical way and has been subject to evaluation in cost-effectiveness.

Discussion: It seems to us that the tool* will represent a major advance in the next coming future, while it proves its effectiveness in terms of costs that the authors do believe exists. For now, more important was to build a tool that allowed having an aid-de-memóire that standardized the preventive measured, diminishing the hazard on the prevention of pressure ulcers.

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PREVALENS STUDY AT A UNIVERSITY HOSPITAL

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Aim: We have conducted a prevalense study of pressure ulcers at a University hospital. The purpose of this poster is to present the results of the study.

Methods: All patients more than 15 years old whom were in hospital in week 5-6 2008 were included in the study. 6 woundnurses and 2 doctors from our department undertook the examination. the following were recorded, length of stay, gender, age, number and grade of pressure ulcer. The pressure ulcer relief of the patient and the documentation in the hospital journals.

Results: In total 591 inpatient were included. 164 patients were excluded and 427 patient were examined from the project group. 192 patients were found with pressure ulcer grad 0-IV giving af prevalence of 32,5%. If grad 0 ulcer not were included the prevalence was 17,3%.

Conclusions: the study presented a high prevalense. An overall insufficient pressure ulcer relief of the patients and missing documentation in the hospital journals.

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EFFICACY EVALUATION OF ANTI-DECUBITUS SYSTEM IN THE EMERGENCY DEPARTMENT

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Object: Efficacy evaluation of a stretcher, anti-decubit mattress for reduction of pressure ulcers.

Method: Patients, over 65 years old, have been envolved in the project, while at the emergency dept. The choice between the anti-decubitus or traditional mattress, has been effected with random criteria,using a previously prepared schedule system.

As soon as the patient arrived in emergency dept, he was schedule and monitorized till his dismissal and eventual pressure ulcers insurgence duly recorded.

The practical advantages of the anti-decubitus mattress have been tested by medical staff of emergency dept, as well as a convenient evaluation about it has been asked to the patients by a test. The EPUAP classification for pressure ulcers has been used for the evaluation of insurgence. 191 patients have been checked, 90 of them making use the experimental mattress and the remaing 101 using the traditional ones.

Results: We got a relevant ($p < 0,005$) difference between the two mentioned above groups, being the percentage of pressure ulcers respectively of 0% for the new tested mattress and 19% for the traditional ones.

Conclusions: The efficacy of the experimental mattress is to be seen in the reduction of the damages caused by a prolonged immobility in the patients presenting new ulcers.

We got no negative comments, but fully positive.

Further studies are necessary to confirm the above results on larger proportion basis.

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A PILOT TRIAL OF TOPICAL NEGATIVE PRESSURE THERAPY (TNP) FOR THE TREATMENT OF GRADE III/IV PRESSURE ULCERS

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Aim: The aim of this pilot randomised controlled trial (RCT) was to establish the feasibility of conducting a full RCT of TNP for the treatment of grade III and IV pressure ulcers and to pilot all aspects of the trial.

Methods: This was a two centre (acute and community), pilot RCT. Participants were randomised to receive either TNP or Standard Care (SC) (spun hydrocolloid, alginate or foam dressings). The primary outcome measure was time to healing of the reference pressure ulcer (RPU). Secondary outcome measures included recruitment rates, frequency of treatment visits, resources used and duration of follow-up.

Results: 312 patients were screened for eligibility into this trial over a 12-month recruitment period. 12/312 (3.8%) were randomised; six to TNP and six to SC. Only 1 RPU healed (TNP group) with a time to healing of 79 days. The mean number of treatment visits per week was 3.1 (TNP) and 5.7 (SC). 6/6 TNP and 1/6 SC participants withdrew from trial treatment. The mean duration of follow-up was 3.8 (TNP) and 5.0 (SC) months.

Conclusions: This pilot yielded vital information for the planning of any future full study including projected recruited rate; necessary duration of follow up and extent of research nurse support required. Data will also be used to refine a cost effectiveness model.

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BUERGUER IN THE ELDERLY: PRESSURE ULCERS ARE NOT ALWAYS PRESSURE ULCERS

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Introduction: Pressure Ulcers (PUs) are one of the most frequent pathology in the elderly, secondary to a functional deterioration with immobility and a lengthy imbedded. They frequently appear in heels and external malleolus; one can run the risk of labelling PUs to injuries of another origin, as in this case.

Aim: Know and extend the field of pathologies related to PUs.

Method: 72 years old patient, under examination, presents an ulcerated wound in external malleolus and necrotic plaque in left heel compatible with PU Grade 3º.

The characteristics of wounds and patient were decisive to reject what at first sight could be evident, presenting a differential diagnosis: diabetic foot, arteriosclerosis disease and thromboangiitis obliterans.

The thromboangiitis obliterans or Buerguer Disease is a vascular inflammatory occlusive disease which affects medium and low calibre arteries and veins of superior-inferior members, with cyanosis in hands, feet, pain and intermittent claudication. Symptoms: blood vessels in “pencil point” and veins “corkscrew”. Etiopathogenesis: associated to tobacco.

Result: Treatments made by infirmary personnel (photographic register), an outpatient in the pathologic anatomy department of the mentioned hospital. Favourable progress, healing of skin wounds in inferior members.

Conclusion: The interest of this case lies in: people older than 40 are rarely affected by this disease. Despite of the high frequency of PUs in the elderly, not all ulcerated wounds in heels and maleolos corresponds to PUs.

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EVALUATION OF A HEEL PRESSURE ULCER PREVENTION PROTOCOL I N AT-RISK PATIENTS (PAD, DIABETE) IN A GERIATRIC DEPARTMENT

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Aim: In geriatric medicine, the most common location for pressure ulcers is on the heels. 50% of patients over the age of 80 years have peripheral arterial disease, which can cause a reduction in distal perfusion and therefore promote the development of a pressure ulcer.

Methods: Patients are in average 86 years old and the incidence of pressure ulcers is 4%, with 70% of these located on the heels. We report the results of a heel pressure ulcer prevention protocol in patients at high risk, suffering from diabetes and/or Peripheral Arterial Disease (PAD). In addition to the usual prevention protocol, these patients underwent light massage of the heel with a pressure ulcer prevention solution which contains hyperoxygenated fatty acid esters, followed by application of a TLC (Technology Lipido-Colloid) soft-adherent hydrocellular dressing, to which 4 drops of pressure ulcer prevention solution had been applied in the centre, with a tubular net or bandage used to secure the hydrocellular dressing in place. Massage was repeated every 3 days and the dressing was changed once weekly.

Results: In patients with a very high pressure ulcer risk (average Angers scale score: 21.5), hospitalised for an average of 24.2 days, no new heel pressure ulcers developed, whereas 50% of the patients had a stage 1 heel ulcer on admission. In addition, a third of the patients presented an episode of infection during hospitalisation.

Conclusions: The protocol for at risk patients is very effective to prevent development of pressure ulcers.

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EFFECT OF A NEW METALLOPROTEINASE INHIBITOR (NOSF) IN THE LOCAL MANAGEMENT OF PRESSURE ULCERS: RESULTS OF A CLINICAL STUDY

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[3]*Laboratories Urgo (Chenove, France)*

Aim: Various factors contribute to the chronicity of pressure ulcers: the cellular and systemic effects of aging, repeated ischemia–reperfusion injuries, bacterial contamination, local excess of Matrix Metalloproteinases (MMPs). Nano-Oligosaccharide Factor (NOSF) is a new compound known to inhibit MMPs activity, and then may contribute to promote the healing process. The objective of this study was to assess the efficacy and tolerance of the new lipido-colloid absorbent dressing impregnated with NOSF in the local management of stage 3 pressure ulcers.

Methods: This study was an open multicenter, non-comparative clinical trial. At baseline, pressure ulcer area was ranged from 3 to 50 cm^2, covered with granulation tissue (^{3}50% of the wound bed).For each included patient, clinical, planimetric and photographic evaluations were weekly recorded, during the 6 weeks follow-up, using standardised protocols. The relative rate of healing, determined through the area reduction was selected as the primary efficacy criterion of this study.

Results: The 25 included patients were followed during the 6 weeks period. Mainly located on sacral and heel areas, the baseline mean wound area was 6.53 cm^2 and was reduced by an average of 47.3% to 3.94 cm^2 at the end of treatment. Complete healing was obtained in 4 patients in an average time of 31 days. Two local adverse events occurred under the tested dressing.

Conclusions: NOSF-matrix seems to be a very promising option for the local management of pressure ulcers, chronic wounds known to be of poor healing prognosis.

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WITHDRAWN

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FACTORS AFFECTING THE HEALING OF PRESSURE ULCERS IN A KOREAN ACUTE CARE HOSPITAL

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Status reports and medical records on a total of 326 PUs from 158patients who were hospitalized in an acute care hospital located in Seoul, Korea and had no longer needs for the treatments of PUs because of complete healing of PUs or discharge from the hospital after experiencing PUs for a year.

The instruments used in study included the questionnaires (developed by the researchers based on factors affecting PU healing extracted through literature review), the Malnutrition Universal Screening Tool to access nutritional status and the Pressure Ulcer Scale for Healing tool to access healing of PU. The data were analyzed with real numbers with percentages and averages with standard deviation, Pearson's correlation coefficient, the Kruskal-Wallis test and the Mann-Whitney U test were used to test correlation, and the results were subjected to multiple regression analysis.

Results: The variables affecting PU healing included urinary incontinence, mean arterial pressure (MAP), serum albumin level and position change; these variables accounted for PU healing by 9%. PUs were improved when the MAP was higher (B=0.051), the serum albumin was > 2.8 gm/dl (B=1.198), cases in which urinary incontinence was managed (B=-1.197), and position change was performed (B=1.023).

Conclusion: PU for acute patients would be improved by maintaining the MAP, providing protein supplements to keep serum albumin level > 2.8 gm/dl, changing patient's positions and managing urinary incontinence.

Aim: To determine the factors affecting pressure ulcer (PU) healing

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TENSOR FASCIA LATA (TFL) V-Y FLAPS FOR CLOSURE OF TROHANTER DEFECTS

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The aim of study is to demonstrate TFL flap as a best for closure of trohanter defects. Decubitus, from the Latin decumbere, means «to lie down.» Trohanter ulcers are one of the most common in all patient groups. Rotated TFL flap are used but this flap requires wide separation and donor side must be closed by skin graft.

Methods: 33 patients with diagnoses trohanter pressure ulcers (III-V degree Yarkony-Kirk classification) were treated from the October 2005 until the December 2009. V-Y shape TFL flap were used in 49 cases. In 13 patients TFL flap was used to closed defect after Girlstone procedure.

Results: Average age was 51.64 years. Average hospital stay was 78 days. Each patients has 2.44 pressure ulcers. Donor side closed primary – 94%, skin graft – 6%. Average operation time – 150 minutes (45 till 420). Complications – heeling by secondary intention 6%, hematoma – 30%, seroma – 9%, distal partial flap necrosis – 48%- healing without surgical intervention.

Discussion:. Trohanter pressure sore defects can be closed using rotated fasciomiocutaneus flaps but donor side must be closed by split thickness skin graft, what can developed that scars can lie on pressure points. V-Y shape TFL fasciomiocutaneus flaps are good to close big trohanter ulcer defects, donor sides can be closed primary.

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VALUE OF A SILVER LIPIDO-COLLOID INTERFACE IN THE TREATMENT OF LOCALLY INFECTED HEEL ULCERS

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Aim: The lipido-colloid interface combined with silver ions was assessed in patients

with pressure ulcers demonstrating a high level of bacterial colonisation or local infection.

Methods: 2/3 of the patients were women, and the average age was 85 years. The majority of these patients were undernourished, with hypertension and a history of heart disease in 2/3 of cases, and with peripheral arterial disease and diabetes in 1/3 of cases. The pressure ulcers had been present for an average of 5 months. 2/3 were located on heel and 1/3 on foot. The distribution between grade 3 and 4 was 1/3 – 2/3. The average surface area was 29 cm^2 (5-52 cm^2). In 1/3 of cases the skin around the ulcer was healthy, in 2/3 of cases it was inflamed and oedematous and in 1/3 of cases, significant colonisation with pseudomonas was suspected.

Results: The average treatment duration was 7 weeks, leading to a rapid improvement in local signs of infection, along with a 74% reduction in surface area (-65% to -79%) with very good tolerance. Dressings were changed every 2 days on average. The good conformability of the interface facilitated application to an always awkward wound location.

Conclusions: The lipido-colloid interface combined with silver ions led to a rapid improvement in the signs of local infection with a retriggering of the healing process, leading to a significant reduction in the surface area of the pressure ulcer (-74%).

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SURGICAL DECUBITUS ULCERS TREATMENT (FASCIOCUTANEUS VS MYOCUTANEUS FLAPS)

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Aim: In treatment of decubitus ulcers the main problem is recurrence of ulcus. To obtain long lasting result we should cover prominences of bones with thick local flaps which have good blood supply. In literature we can find disagreement in choosing of flaps. The aim of study is to compare two methods of decubitus ulcers treatment (transposition of fasciocutaneus flap versus myocutaneus flap) and to find best solution to prevent recurrence of decubitus ulcers.

Material and Methods: A retrospective data analysis of 168 patients with pressure ulcers treated, from January 1996 to January 2009 was performed.

Results: During 14 year period in department of Plastic and reconstructive surgery of Kaunas University of Medicine Hospital 168 patients with decubitus ulcers were treated. The mean of patients age was 42±13.7 years. Patients suffer from ducubitus ulcers from 8.9±9 months on average. The most common area of ulcers was tuber ischii area. Comparing the groups according the age of patients, the size of pressure ulcer, pathogens isolated from pressure ulcers the difference was not statistically significant ($p>0,05$). Comparing groups according postoperative fluid secretion and infection it was bigger in fasciocutaneus flap transposition but difference was not statistically significant. The recurrence of pressure ulcer was statistically significant lower in myocutaneus flap transposition group.

Conclusions: In our study we found that more effective method of decubitus ulcers treatment is transposition of myocuteneus flap with lower recurrence rate, lower wound infection rate and lower postoperative fluid secretion after operation.

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SURGICAL TACTICS IN THE TREATMENT OF PRESSURE ULCERS

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Aim: Pressure ulcers impose a significant financial burden on health care systems and negatively affect the quality of life. Surgery is an important component of pressure ulcer care and the general principle in the treatment is complete wound closure. This goal might be achieved in different ways. During the past two decades, radical debridement and musculo-cutaneous reconstruction were the «Gold standard» in the surgical treatment. Nevertheless, in recent years new technologies become available for the less traumatic debridement and closure.

Methods: Pressure ulcers are susceptible to variations in their treatment. There are different therapeutic options for the superficial to deepest pressure ulcers from the use of advanced dressings and negative pressure therapy to use of biological substitutes and well as growth factors. There are different debridement methods**:** surgical-sharp, ultrasound ablation and hydrosurgery, maggot therapy, autolytic and enzymatic. More conservative debridement is precise; it helps to avoid the damage of viable tissue and its vascular supply, thus reducing the extent of surgical procedure, alowing to postpone that untill patient‘s condition stabilises or avoid the surgical procedure achieving better outcome. Promotion of wound spontaneous closure is also beneficial in the treatment of pressure ulcers. The use of growth factors, cultured cells (fibroblasts, keratinocytes) advanced dressings and technical means (topical negative pressure, light and oxygen) show impressive results in different institutions.

Conclusion: Advanced wound care is progressing fast. New technological means and better understanding of wound healing processes change protocols of wound care making the treatment more individual.

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PROBLEMATIC HEEL ULCERS CLOSED WITH POLYMERIC MEMBRANE DRESSINGS

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Introduction: This study highlights three patients who would not appropriately offload their heels: a 58-year-old man with severe Parkinson’s, a combative 80-year-old man with Alzheimer’s and a severely contracted 60 year old woman with Alzheimer’s, all with 3-6 month old stage IV heel pressure ulcers acquired during hospitalization.

Aim: Evaluation of polymeric membrane dressings in regards to ease of use, cleansing and healing.

Method: Only one patient’s wound was sharp debrided. After initial cleansing the dressings were placed directly on each wound and replaced daily without rinsing or any other intervention.

Results: The patient with Parkinson’s would not tolerate offloading. His previous dressings stuck painfully to his woundbed, but the polymeric membrane dressings were non-adherent and promoted steady wound healing. The 80 year old man with Alzheimer’s was extremely aggressive banging his heels on the bedrail. Dressing changes were quick, atraumatic and easy to perform, so his wife was able to do them allowing community nursing visits to decrease from daily to weekly. The 60 year old lady with Alzheimer’s showed an improvement after 2 days. Her large cavity closed after 3,5 months. Both the other ulcers closed within nine months.

Conclusion: Polymeric membrane dressings protected the wounds by providing cushioning and promoted a moist environment while continuously cleansing the wounds which led to woundclosure. Because these dressings are safe and non-adherent and manual wound bed cleansing was unnecessary, all families participated in care by doing dressing changes, greatly saving nursing costs.

Pressure Ulcer

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CAN 'MOISTURE-RELATED SKIN CHANGES' BE TREATED MORE EFFECTIVELY?

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Introduction / Backgrounds: Some score it as pressure ulcers, some as 'moisture related skin changes', the decision of classification might be important, but more significant is the treating of this painful skin condition.The frequent presence of urine and faeces on the skin will damage the skin and let us not forget the Intertrigo.

Having used all sorts of wound dressings (some causing discomfort to the patient, some threatening the surrounding skin) and having used 'skin drying crèmes' like zinc oil locally, the outcome was not satisfactory.

Always looking for a better treatment and thus result we have done a trial with skin protectant* and cleanser** in our hospital treating patients with 'moisture related skin changes'. The trial showed us that the patients and the nurses were very content with these products. The results of using the product 1 week, the improvement of the skin during this trial was very promising, to say the least.

Aim of the study: To find out what makes this product work by 'moisture-related skin changes' and does it have a similar effect on Decubitus and irritation caused by wound fluid.

Method: A literature study - and broaden the trial of using these products in all 'moisture-related skin changes'.

Results and Conclusions: The result of the study and broadened trial treating 'moisture-related skin changes' with skin protectant* and cleanser** will learn us what makes it so effective and can it be as valuable on Decubitus and irritation caused by wound fluid.

*Proshield Plus
**Proshield Foam & Spray

Pressure Ulcer

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WITHDRAWN

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THE PREVALENCE OF PRESSURE ULCERS IN A PSYCHIATRIC HOSPITAL IN THE NETHERLANDS

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Background: Little is known about the prevalence of pressure ulcers with clients living in a Psychiatric Hospital.

Purpose: Insight into the prevalence of pressure ulcers in a Psychiatric Hospital

Methods: The first study was a longitudinal design (2003)
The cross-sectional studies were conducted in 2005 and 2006 and include 1 measurement time.

Results: In 2003 (N = 100) 21.34%
In 2005 (N = 81) 14.8%
In 2006 (N = 76) 9.2%

Conclusion: Pressure ulcers also occurs in psychiatric hospitals.

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FROM THE BEDSORE PREVALENCE INQUIRY TO THE PROFESSIONAL PRACTICE ASSESSMENT

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Every three years we carry out a bedsore prevalence inquiry in the General Hospital Center of Vichy and we integrated a Professional Practice Assessment section.

Method and patients: On June 11, 2009, a questionnaire inquiry was completed in 19 units. Mobility measurement according to the Braden Scale. Analysis of equipment materials. Role of different health care providers.

Results: Of 515 hospitalized patients, 97 were afflicted with bedsores, which is a prevalence of 19%. 55% are women. Average age is 77 years old. According to the Braden scale, 50.8% of patients are not at risk for bedsores, 36.8% have a moderate risk. 45% of bedsore cases are established after hospital admittance. 46% of bedsores affect the heel, 32% affect the sacrum. 48% are stage 1; 5% are stage 4. 62% of beds are equipped with mattresses*. 60% of patients with bedsores experience pain, 41% have a nutritional supplement, 53% underwent physical therapy, 16% can make the transfer from bed to chair, 52% have an education in bedsore treatment, 54% have nutritional education.

Conclusion: We had a declining effect between 2003 and 2006, which is linked to the acquisition of new materials. The 2009 inquiry shows us that we no longer have this material effect and that we should work on the human effect, particularly in the following points: nutritional supplement establishment, pain assessment, specialized opinions, mobilization through physical therapy and patient education.

* TEMPUR

Pressure Ulcer

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TREATMENT OF A CHRONIC STAGE IV PRESSURE ULCER USING TOPICAL WOUND OXYGEN THERAPY

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Introduction: Chronic wounds are frequent, difficult to treat and show high rates of complications. We examined the clinical efficacy of a unique pressurized topical wound oxygen* device in a long term care setting in Canada on a 67 y/o male patient with a stage IV pressure ulcer.

Methods: The patient was treated daily with topical wound oxygen* therapy for 90 minutes. Prior to each treatment, the patients wound dressings were removed and the wound bed was irrigated with a normal saline solution. After each topical wound oxygen* treatment, the wound was treated with controlled-release ionic silver** and antiseptics*** then redressed with standard gauze dressing. The topical wound oxygen* device delivered humidified medical grade oxygen at a constant pressure of 30 mbar. The wound care coordinator performed weekly wound assessments including photos to document the wound area, volume and changes in each from the previous assessment.

Results: Initial wound measurements indicated the ulcer had an area of 31.2 cm2 with a volume of 109.2 cm3. Tissue was noted to be very necrotic and the peri-wound was macerated. After one week of treatment, the wound area and volume had increased slightly, however the physician noted that the maceration had improved. Week 2 measurements showed a decrease in both area and volume with significant granulation. By week 3, the wound was 95% covered with granulation and it was noted the peri-wound was less friable. Wound area had decreased by 43% and the volume by 41% and dressings were now being done with antimicrobial peptides**** packing. The patient was hospitalized after 6 weeks of therapy for an unrelated condition. At that time, his wound area had decreased to 4.55 cm2 and volume to 11.38 cm3. Topical wound oxygen* was discontinued during the hospitalization. Topical wound oxygen* resumed one month later; with an area of 5.28 cm2 and volume of 12.5 cm3. After 2 additional weeks of therapy, the wound had 100% closure.

Observations:
1. Topical wound oxygen* improves local tissue perfusion
2. Topical wound oxygen* softens necrotic tissue and enhances debridement
3. Topical wound oxygen* eliminates maceration
4. Topical wound oxygen* reduces nursing intervention time

Conclusions: Patients with severe chronic wounds benefit from the treatment with Topical wound oxygen* and show remarkable wound closure rates.

*TWO2, **Silversorb, ***Betadine, ****Dermagen

Pressure Ulcer

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PRESSURE ULCERS – RISK FACTORS PREVALENT BEYOND THE NORTON SCALE

Fabíola Figueiredo[1].

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Aim: The present essay is based upon an epidemiological study, retrospective and analytic, case-control type, which aims to identify the over risk factors (intrinsic and/or extrinsic) that may contribute to pressure ulcers apart from those which are predicted by the Norton Scale.

Methods: This data analysis was acquainted by means of computer software (SPSS 11.0), which made it possible to calculate odds ratio.

Results: This way, in the field of pressure ulcers prevention, besides the factors mentioned in the Norton Scale, nurses should also pay attention to other factors, such as a Arterial Blood Pressure; the increase of body temperature above 37ºC; of hypokaliemia; of hypoproteinemia; the increase of alkaline phosphatase, of GGT and of kinase creatinine; of hypohemoglobinemia; the presence of Diabetes Mellitus; the corticotherapy and the presence of sensory-motor deficits.

Conclusions: According to this, and being aware of such group of factors, it is possible to plan, the most suitable way, some interventions in order to prevent pressure ulcers.

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CHANGES IN (WOUND-SPECIFIC) QUALITY OF LIFE OF PATIENTS WITH DIFFERENT TYPES OF CHRONIC WOUNDS IN THE COURSE OF TIME

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Aim: The main aim of the study fulfilled was to investigate changes in the overall as well as in the wound-specific quality of life of patients with different types of chronic wounds in the course of time.

Methods: Data from a wound care centre on patients' quality of life - using both a generic as well as a wound-specific iinstrument - was collected at four points in time. Sensitivity analyses were carried out for different subpopulations.

Results: Data analysis revealed – for both instruments that were used – that the areas of pain and mobility play a crucial role from the patients' perspective. Psychosocial problems, such as fear (of amputation), anxiety and depression, however, have also been mentioned. Sensitivity analyses showed that the mental state of the patient has – beside relevant concomitant diseases such as diabetes for example – a high impact on the chance of success to completely heal the wound. Complete wound healing in turn correlated with significant improvements towards both generic as well as wound-specific quality of life.

Discussion: A holistic approach with a main focus on pain reduction and an improvement of mobility in combination with further strategies to strengthen the patients' mental well-being and compliance should be pursued. Only if the patients' mental health state is accounted for, too, significant improvements towards the patients' quality of life can be reached.

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THE LEVEL PAIN EXPERIENCED DURING THERAPY AND DRESSING CHANGES OF A GAUZE-BASED NEGATIVE PRESSURE WOUND THERAPY*

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Aim: Gauze has been adopted as a wound filler for use in NPWT. Unresolved pain negatively affects wound healing and has an impact on quality of life. The null hypothesis of this study was that gauze-based NPWT may provide a means of reducing patient pain during NPWT. The aim was to assess the level of pain experienced during therapy and dressing changes of a gauze based NPWT system*.

Method: A prospective, multi-centre evaluation of 152 patients was conducted. A sub-analysis of 57 patients in home, long-term or out-patient clinic settings were assessed with chronic and acute wounds. A semi-quantitative scoring method was devised to measure pain. The need for analgesics was also monitored. Wound area and depth was also recorded and baseline wound dimensions were compared with dimensions at the end of therapy.

Results: The majority of patients experienced no pain during NPWT (93.6%) or during dressing removal (90.7%) 88.4% of patients described the therapy as comfortable and 14.2% as acceptable. Only 24.5% of these patients required analgesics. No damage to the wound surface granulation tissue was observed in the majority of wound assessments (96.9%). Overall, good wound progression was also observed (9.1% reduction in wound area and 10.3% reduction in depth per week of therapy).

Conclusion: Minimal pain during therapy and during dressing changes was reported. This may be that no damage to the granulating surface was observed in the majority of dressing changes.

Quality of Life

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HYDROCELLULOSE BASED DRESSINGS (HCBD) IN THE MANAGEMENT OF CHILDREN WITH LOCALISED EPIDERMOLYSIS BULLOSA SIMPLEX (EBS)

Jacqueline Denyer[1].

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The term epidermolysis bullosa represents several disorders each having a wide range of severity.

The common factor is an extreme fragiligy of the skin and mucous membranes and a susceptibility of these to blister or break down in response to minimal everyday friction and trauma.

In its mildest form, Localised EBS, painful blistering is limited to the hands and feet with the development of chronic wounds being uncommon in this group.

Aim: To reduce pain from blister sites in children with Localised EBS
Dressing evaluation to reflect;
Pain reduction (FLACC and Wong Baker scores)
Mobility
Ease of application/removal
Integrity of peri-blister skin
Duration of blister

Method: Children with Localised EBS who had blistering to their hands and feet were chosen for the study. Localised EBS is generally more troublesome in children who are walking, therefore infants under one year old were excluded from this initial study

Results: The dressing was easy to apply and offered immediate and sustained pain relief.Problems with the dressing drying out in advance of daily dressing changes were solved by the addition of lipidocolloid dressings.

Discussion: The study demonstrated effective pain relief and increased mobility in all cases. An added benefit has been the reduction of itch. Improvement in the rate of healing of blister sites has not been noted; however there is reduction in trauma from adhesion of the blister site to footwear enabling healing to take place.

Quality of Life

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PERILESIONAL SKIN AND QUALITY OF LIFE. A FACTOR TO CONSIDER IN CHOOSING A DRESSING? RESULTS OF THE SOFT ENQUIRY

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Context: The impact of the state of perilesional skin on the quality of life of patients treated for an acute or chronic wound has been rarely studied. The SOFT inquiry evaluated the importance of this parameter and the implementation of a hydrocellular microadhesive dressing.

Methods: Prospective inquiry led by liberal or hospital professionals. 400 patients of all ages treated for an acute or chronic wound were included. The nature of the wound and the aspect of perilesional skin were reported. They were assessed on a quality of life scale (EuroQol 5D). 360 patients were reviewed 10 to 21 days after having been subjected to a hydrocellular microadhesive dressing and the same parameters were reevaluated.

Results: Wound chronicity and the fragility of perilesional skin are two factors that are independent of alteration in quality of life, except for the anxiety dimension. In the case of fragile perilesional skin, local treatment is more painful. During the follow-up visit for hydrocellular microadhesive dressing, improvement in quality of life is as significant as the state of the perilesional skin improving for non reepidermized wounds. The pain factor is more sensitive to this change.

Conclusion: These preliminary results suggest that the state of perilesional skin is a significant alteration factor in the quality of life of these patients. The impact of hydrocellular microadhesive dressings is substantial in improving the real life of these subjects.

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WOUNDCARE IN MOTION: EVALUATION OF A COLLAGEN BOVINE ORIGIN DRESSING ON HARD TO HEAL WOUNDS

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[1]*CHUV (Lausanne, Switzerland)*

Aim: In our interdisciplinary wound care unit we treat on average 20-40 patients per day with numerous types of acute and chronic complex wounds. In order to maintain an excellent holistic approach to wound care one aspect is focused on improving techniques and methods especially in hard to heal wounds. We have decided to test a new collagen based product with the aim of boosting the healing process in non progressing wounds.

Methods: The evaluation was carried out over a four month period. Approbation was sought from each patient and the surgical consultant concerned. In a preliminary selection of stagnating wounds where modern dressings and skin grafting had failed, we applied the collagen based dressing. The properties of this dressing are a porous structure which absorbs necrosis, bacteria, fibrin and exudates, promoting the formation of granulation tissue. Dressing changes were made twice weekly either in our unit or by community health nurses with regular controls on our part. Wound assessment was documented using wound care follow up forms, with photos and measurements; bacterial swabs were carried out where critical colonisation was suspected.

Results: Within the time frame given, 5 wounds of differing origins were evaluated. The initial results were very encouraging,2 cases haven't shown any improvement, an inflammatory state is present in both.

Conclusions: This dressing is promising and needs further assessment, though limitations in use were found in inflammatory situations.

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THE HEALING TIME

Claudio Ligresti[1].

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Summary: Objectives: In recent years we have tried to find a unique parameter in assessing the evolution of a wound that could simultaneously serve as a prognostic indicator of healing. Right from the start, time appeared as a key element, a parameter of effectiveness and starting point in establishing a treatment plan. Starting from these considerations, by using a mathematical formula developed by us, we tried to assess a priori the time required to achieve the complete healing of a wound on the basis of the action timing of each treatment selected and the preliminary assessment of the local characteristics of the lesion as well as the patient's general conditions.

Materials and Methods: The basic steps of our learning process break down into the local assessment of the wound as well as the patient's general conditions expressed under the common concept of Criticalness Index and the analysis of the assessed therapies as Average time for holistic healing.

Conclusions: The holistic healing time takes on a new meaning: a parameter used to asses the effectiveness of a treatment (healing rate). According to a new concept, called Therapeutic Elasticity, time suits our needs. If the hypothetical healing time, calculated a priori in relation to the therapeutic choices adopted, is considered appropriate for the treatment of skin ulcers the corresponding treatments will be adopted but, if such healing time is considered inappropriate (too long) you can use more effective therapeutic means.

Wound Assessment

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WOUND TREATMENT: SWISS TRAINING AND CAMEROONIAN REALITY

Coralie Clerc[1], Aline Tereins[1], Cécile Michelle Mengue Zie[1].

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Purpose: Share our experience and difficulties during treatment that we encountered during our training stage in Cameroon.

Method: During our observation and participation in dressing repair, in a Cameroonian health center, we noted that numerous wounds were reinfected, which made us ask some questions.

Results: We realized that one of the reasons for non-healing in wounds was a certain lack of compliance on the part of the patients. They do not strictly follow the advice given (lift the limb, respect appointment days, etc.). The lack of economic means does not allow them to have a satisfying quality of life; they therefore have other priorities above treatment. We have often encountered people who have difficulties regarding good life and physical hygiene, which promotes reinfection, sometimes very quickly.

It is also incontestable that the lack of analgesics makes treatment difficult and can accentuate the patients' lack of compliance.

Conclusion: An observation period allows us to have discussions with the medical staff, support them, find strategies to improve hygiene in treatment and explain to patients the importance of respecting treatments for their wounds to optimize healing.

Wound Assessment

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NEW APPROACHES TO THE OSTOMY COMPLICATIONS TREATMENT

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Ostomy complications at the peristomal skin are common and could be considered as a chronic wounds. We wanted to find out if the ostomy complication could be treated by using nonadherent silicone cover bandages and if we can use some special tool for the evaluation of the treatment.

Aim: To evaluate the effect of the silicone cover bandages for the ostomy complications on the peristomal skin (areal defects, presure sores and hypergranulation. To asses the effectivity of using of the Ostomy skin tool - DET score (D - discolouration, E - erosion, T - tissue overgrowth) and VAS (Visual analogic scale) for pain management.

Methods: We have used clinical observation methods with the special asesment tools (DET and VAS). There were 13 patients observed for 12 months period (4 - areal defects, 4 - decubitus on the peristomal skin area and 5 - hypergranulation). We have been evaluated these criterion: condition of the skin in peristomal skin area (DET score), level of the pain (VAS), adhesion of the silicone cover bandage, other personal impression (+ positive, - negative).

Results: The peristomal complication were very good influenced by the using of the silicone cover. All the patients had lower level of the pain at the end of the study. The hypergranulation was effectively supress. 8 patients had better adhesion of the cover bandages.

Conclusion: In our study we find out the positive effect of the silicon cover in the peristomal complications treatment.

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THE REPERCUSSION ON AVERAGE HOSPITAL STAYS OF USING AN IBUPROFEN-RELEASING DRESSING IN THE TREATMENT OF SURGICAL WOUNDS AFTER KNEE ARTHROPLASTY

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Aim: To compare in a Traumatology Ward the effectiveness of two techniques for treating surgical wounds after knee arthroplasty. Average hospital stay is used as an indicator of the extent to which the two techniques allow for effective healing without complications. It is assumed that a higher number of complications will increase the average hospital stay.

Methods: Combined prospective and retrospective study with analytical component. All operations involving knee joint replacements are included in the study without excluding patients with co-morbidities.

The two treatmentare:

- Treatment Type 1:
  - Preparation of wound care instruments, wound cleansing with saline solution, application of hydrofiber dressing, use of transparent film for fixation
  - Number of interventions: 125

- Treatment Type 2:
  - Preparation of wound care instruments, wound cleansing with saline solution, application of ibuprofen-releasing foam dressing, use of transparent film for fixation
  - Number of interventions: 45

Results: The average hospital stay of patients treated with Treatment Type 1 was 14 days (interquartilic range: 12-20), whereas the average hospital stay of patients treated with Treatment Type 2 (ibuprofen-releasing dressing) was 10 days (interquartilic range: 6-16).

Conclusions: In the group treated with the ibuprofen-releasing dressing, wound healing progressed with fewer complications and patient mobility improved more rapidly, meaning that average hospital stay for this kind of surgery has been reduced from 14 days to 10, representing a reduction of 28.6%.

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WOUND TREND SCALE (WTS): WOUND DOCUMENTATION FOR TREND IDENTIFICATION AND COST-ANALYSIS

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Aim: The WTS score predicts wound healing when reduced or deterioration if increased. Numeric values assigned to wound assessment findings and infection risk contributes to a score with zero being closed. Evaluation of the diagnostic value of the WTS compared to size and Bates-Jensen Wound Assessment Tool (BWAT) was done after three years use in a wound clinic. Demonstrate WTS potential for cost-analysis by measuring the impact on wound healing of a product*.

Method: WTS data was collected from a random selection of 70 wounds with three assessments and known outcomes. WTS data was translated to size (length x width) and BWAT. Diagnostic value was calculated by comparing predicted trend with outcome for second and third scores. Cost-efficiency ratio analysis for product* use schedule was done.

Results: Diagnostic value - sensitivity, specificity, predictive value (positive; negative), and test efficiency were: size (95, 56, (85; 81), 84); BWAT (92, 76, (91; 78), 87); and WTS (99, 92, (97; 93), 96). Cost- efficiency ratio calculation for timing of product use (immediate, delayed, and none) found cost per unit change was $121, $169, and $454 (Canadian) respectively, a ratio of 2.2 for delayed and 4.4 none. Findings indicate that immediate product use costs a quarter of no product with delayed use just over half the cost.

Conclusions: In addition to best wound trend prediction the WTS is a practical wound documentation tool that provides information for cost-analysis of interventions.

*Prisma (Systagenix)

Wound Assessment

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POLYMERIC MEMBRANE DRESSINGS IN THE MANAGEMENT OF NEONATES AND INFANTS WITH SEVERE FORMS OF EPIDERMOLYSIS BULLOSA (EB)

Jacqueline Denyer[1].

[1]*Great Ormond Street Hospital / DebRA UK (London, United Kingdom)*

Epidermolysis bullosa comprises a group of genetically determined skin-disorders.
The common factor is the tendency for the skin and mucous membranes to break down in response to minimal trauma and friction.
Neonates with severe forms of EB pose a particular problem as they often have extensive wounds present prenatally and compounded by birth trauma.

Aim: Dressing evaluation in regards to;
Ease of application/removal.
Control of odour/exudate.
Healing
Duration of dressingchanges
Pain reduction (Neonatal Infant Pain and Flacc Pain Scores)
Frequency of infection

Method: 6 severely affected neonates/infants who presented with wounds at birth were selected for the study. Daily dressing changes were required initially due to copious exudate.

Results: The dressing was easy to apply/remove. More rapid healing and reduced painscoring was noted than with previously recommended dressingregimens.
Antibiotic/antimicrobial treatments have not been required to treat skin infections or critical levels of colonization in either child presented in this poster. With previously recommended regimens regular courses of oral antibiotics and topical antimicrobials have been necessary.
The study demonstrated a rapid improvement in wound size in all cases. Reduction of time during dressingchanges has decreased by 1/2-2/3 of the time in this vulnerable age group.
The initial study included infants with severe generalized dystrophic EB and has now been extended to children with other forms of severe EB.
A significant factor has been the ability of the polymeric membrane dressings to prevent critical colonization and infection.

Wound Assessment

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DRAMATIC REDUCTION OF SWELLING AND BRUISING ON SEVERE SPORTS INJURIES WHEN USING POLYMERIC MEMBRANE DRESSINGS

Ruth Burkhard[1].

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In the Swiss Alps we have several major sports events such as the Gigathlon and the Swiss Alpine Marathon. Every year several people are injured due to contusions, falls, road rash, sprains etc. Our hospital takes care of a majority of these patients and since 2007 we have used polymeric membrane dressing to help reduce swelling and bruising caused by these injuries.

Aim: To evaluate the use of polymeric membrane dressings in surgical procedures in regards to pain, oedema and bruising.

Method: The dressings are wrapped or applied in strips onto the injured area without covering the suture line (our surgeons want dry sterile gauze), secured by an elastic bandage, daily control.

Results: The hematoma is absorbed very quickly; difference can be seen after 1 day.

Patients perceive the dressing as comfortable and pain relieving and the swelling is visibly reduced within a day. The example in the poster shows a patient with multiple fractures on her lower leg and demonstrates the rapid reduction of swelling with no swelling at all at discharge after 3 weeks.

Discussion: Our hospital is specialized to take care of sports injuries due to our close location to the annual activities. We first started using polymeric membrane dressings to relieve acute swelling and pain but have now expanded the use to post surgical applications as well. Our patients are amazed over the speed of reduction of bruising/ swelling/pain.

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PAR4, PERCENTAGE AREA REDUCTION IN 4 WEEKS, A ROBUST PREDICTOR OF TOTAL WOUND HEALING

Gerard Koel[1], Frits Oosterveld[1].

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It is not simple to choose effective interventions to realise total wound healing. Thereby chronic wounds need a long time for total healing. The initial healing rate is a predictor and expressed in the PAR4 (Percentage Area Reduction in 4 weeks). PAR is calculated as (A1 - A0) / A0; where in A0 is the initial wound area and A1 the wound area at end of the treatment period.

Wounds with a low PAR4 are likely to remain unhealed after 8 weeks of additional treatment. Kantor (2000), Sheehan (2003) and Cardinal (2008) performed studies that confirm the predictive value of PAR4. In a cutoff point of PAR4 = 37,7% the positive predictive value for complete healing was 70,6% and the likelihood ratio is 6,15; meaning that patients (wounds) that reaching at least PAR4 37,7% have a 6,15 bigger chance on total healing than wounds that don't reach a PAR4 of 37,7%.

We performed a systematic review to determine the PAR4 in 19 RCT's that studied the effects of Electro Stimulation (ES) on chronic skin wounds (n= 1042). We found a PAR4 in the control, most of the time placebo ES group, of around 25%. Applying ES in a random way, any ES type and electrode placement, increased the PAR with 16,4% to 41,4%. In 12 studies (n=460) only unidirectional ES was applied mostly combined with in-wound electrode placement, the difference between ES and control increased to 32,61%.

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DEVELOPMENT OF A MALIGNANT FUNGATING WOUND MANAGEMENT GUIDELINE: A DELPHI STUDY

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Aim: The aim of this study is to obtain consensus among wound care experts in identifying guideline domains and items necessary in determining the wound management strategies of MFW.

Methods: Two independent cross sectional Delphi- surveys. An initial of three domain and 42 items for a systematic and considered judgement of scientific evidence was generated from the literature. A panel of MFW experts in guideline development tests this list using a two-round Delphi consensus method. Each experts was asked to independently score the relevance of the items on a 9-point Likert scale, ranging from 'very important' to 'no important'. The final list consisted of items that were included by at least 60% consensus.

Results: Thirty-two experts participated in the first Delphi round and twenty- two of them in the second round. High scoring domains were 'Tissues management',' Exudates control' and' Protect wound edge'. There was consensus about the relevance of 40 items. The items' nutrition ', ' Body weight' and ' Body high" was excluded because of lack of consensus.

Conclusion: This is the first formal consensus approach towards structuring the considered judgment process in formulating recommendation in clinical guidelines. The final list of items can be used to facilitate the process of guideline development.

Other

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ARE NURSES WHO WORK IN THE ELDERY CARE SETTINGS THE TRUE TISSUE VIABILITY SPECIALISTS?

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Method: An audit was taken of all the patients (n=22) to determine what factors they had which could lead to compromised tissue viability. Information was also collated on the types of wounds treated over the past year and what tissue viability interventions were undertaken.

Results: Number of patients with factor that will compromise tissue viability:

Factor affecting Tissue Viability	Percentage of patients in ward
Incontinence	82
Immobility	86
Polypharmacy	95
Nutritionally Compromised	50
Disorientated to time, place, person	64
Wound	27
Co-morbidity	91
Waterlow >20	100

Types of wound treated:
- Pressure ulcers
- Haematoma
- Surgical wounds
- Leg ulcers
- Fungating lesions
- Diabetic ulcers
- Traumatic wounds

Treatment modalities utilised:
- Compression bandaging
- Larvae
- Topical Negative Pressure
- Versajet (TVN)
- Sharp debridement (TVN)

Discussion: The results demonstrated that 100% of patients had multiple factors which can lead to tissue viability compromise, it also demonstrates that we have a wide range of wounds to deal with, therefore we require knowledge and skills to deal with each of them as each wound type requires a different approach and treatment modality.

Our data highlighted that we have utilised many different treatment methods to deal with the entire wound healing trajectory, many of these modalities the 'general specialties' will be unfamiliar with, it could be argued that the knowledge base and clinical skills of the nurses working in this specialty is superior to many other specialties.

Other

P 222

VALUE OF A NEW INTERFACE IN THE LOCAL TREATMENT OF HEREDITARY EPIDERMOLYSIS BULLOSA LESIONS

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Aim: Hereditary Epidermolysis Bullosa (HEB) is a group of genetic diseases caused by a defect in cohesion between epidermis and dermis. It results in skin separation and blistering, occurring spontaneously or following mild trauma.

In 2000, in a clinical case study conducted on 20 patients with HEB lesions, a lipido-colloid interface combining carboxymethylcellulose and petrolatum on a polyester mesh demonstrated excellent acceptability (painless removal), along with a satisfactory healing rate with an improvement in patients' quality of life. However, the location of certain lesions does not always enable optimum application of this interface.Since April 2009, a new, more conformable lipido-colloid interface has been available. The flexibility of this new mesh is designed to improve the dressing's conformability to the wound, especially in HEB patients, whose wounds may be located in awkward anatomical areas.

Methods: The authors report the results of their experiences with this new interface, through clinical case studies on children with dystrophic HEB. The lesions treated were followed up by the physician until they had healed (clinical, planimetric and photographic assessment).

Results: In addition to complete re-epithelialisation of the lesions, dressing changes proved to be painless, thereby improving patients' quality of life.

Conclusions: These clinical case studies demonstrate the good tolerance and excellent conformability of this new interface, along with its efficacy, justifying its availability to health professionals for use in this indication. The painless character of daily dressing changes with this new interface improves patients' quality of life and makes nursing procedures easier.

P 223

LOCAL TREATMENT OF ARTERIAL WOUNDS WITH A DRESSING CONTAINING NANO-OLIGOSACCHARIDE FACTOR IN AMPUTEES

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Aim: We report our experiences with a metalloproteinase-inhibiting hydrocellular dressing, which contains Nano-OligoSaccharide Factor (NOSF), in the treatment of arterial wounds, and, in particular, wounds on amputation stumps or heel pressure ulcers in unilateral or bilateral lower limb amputees.

Methods: The patients, who had an average age of 52 years, had peripheral arterial disease, associated with insulin-dependent diabetes in 75% of cases. 75% of cases had a history of hypertension, 50% had a history of smoking and 50% had a history of cardiovascular disease. One patient had a history of arterial revascularisation with multiple right and left bypasses. The amputations were major in 100% of cases (75% tibial level, 25% thigh level).

The wounds had been present for an average of 35 months (3-120 months) and had an average size of 6.3 cm^2 (3.8-15 cm^2). On average, the wounds were moderately exuding, with perilesional skin that was macerated in 50% of cases, hyperkeratotic in 25% of cases and normal in 25% of cases. 25% of patients experienced only mild pain. The average treatment duration was 18 weeks and dressings were changed every 3 days on average.

Results: At the end of treatment, 100% of the wounds were completely healed. No pain or local intolerance related to the dressing was reported.

Conclusions: In these patients with severe peripheral artery disease, generally also suffering from insulin-dependent diabetes, with a history of major amputation, the NOSF led to complete wound healing.

P 224

MANAGEMENT OF EPIDERMOLYSIS BULLOSA WITH A NON-ADHERENT CONTACT LAYER WITH TECHNOLOGY LIPIDO-COLLOID (TLC)

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Aim: Epidermolysis bullosa (EB) is a heterogeneous group of rare, inherited skin diseases characterized by recurrent painful skin lesions, often induced by minor trauma resulting in dermal-epidermal separation or split. Approximately 1000 patients suffer from EB in Australia and this pathology has important implications on the psychological, physical and social well being of the child and the family. The local management of these lesions requires a non adhesive and non-adherent dressing, to prevent pain at removal and to help improve the quality of life of these patients.

Methods: This case study presents the case of two young Australian patients suffering from non Herlitz junctional epidermolysis bullosa, and the treatment with a non-adherent contact layer with Lipido-Colloid Technology (TLC).

Results: These cases confirm the efficacy of this non-adherent contact layer with TLC in the treatment of EB.

Conclusions: The non-adherent contact layer with TLC brings management in line with best practice in the treatment of EB, providing further choice for wound management.

Other

P 225

A RANDOMIZED, CONTROLLED STUDY COMPARING THE COSMETIC OUTCOME OF AN INNOVATIVE SKIN CLOSURE DEVICE WITH SUTURE*

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Aim: To compare the wound closure performance and cosmetic results of an innovative skin closure device to the state of the art suture method.

Methods: A prospective, randomized study was conducted in which 61 patients referred to primary section were allocated to wound closure with either the innovative skin closure device containing sterile closure strips combined with an anchoring topical adhesive fluid made of n-butyl-2-cyanoacrylate or suture*. Wound closure performance and cosmetic appearance were evaluated as main parameters. Ease of application and wearing comfort were additionally recorded.

Results: Assessment of wound closure performance by the surgeons resulted in comparably high values in both methods. Cosmetic appearance assessed by patients scored slightly higher with the atraumatic closure device, and achieved no significant difference to suture* in evaluation by surgeons as well as by independent examiners blinded to the method of wound closure. As regards ease of application, suture* as the standard method of wound closure scored slightly higher. Wearing comfort evaluated by the patients showed equally high values of satisfaction for both skin closure methods.

Conclusions: Innovative methods for wound closure compared with traditional methods such as suture provide excellent cosmetic results. Due to equally high scores in all fields of evaluation this new method is a valid alternative to traditional suturing.

* Prolene Suture

Other

P 226

THE DOUCHE: SIMPLE AND EFFECTIVE CLEANING WITH LIMITED MEANS

Paul Bobbink[1], Dimitri Madoery[1].

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Introduction: The douche allows optimal cleaning in wound treatment, it is easy to complete with little means and, because of this fact, is economical. The douche allows to optimize the wound treatment and therefore patient treatment.

Methodology: We observed and researched the resources available to set up, implement or improve the douche for wound treatment in a hospital in Cameroon.

Results: This research of resources and observation allowed us to point out two objectives with the medical staff:

- Increase and dispute the interest for the douche in wound treatment
- Improve the physical installation of the douche to make it more accessible.

These results pushed us to have moments of exchange, information and supervision with medical staff at the hospital. With the assistance of the patients and a caregiver, we made a Power Point presentation on “the douche in wound treatment” which currently serves as support for medical workers and points out the basic principles of the douche during the wound cleaning phase.

Conclusion: We could note, on the part of the medical workers, a large interest for this therapy and motivation for improvement in the quality of taking care of patients and the improvement of available materials.

P 227

REPAIRING OF BURULI ULCER DRESSING: PROPOSITION OF ANALGESICS

Dimitri Madoery[1], Paul Bobbink[1].

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Introduction: During a training period in Cameroon, we noted that there was little pain care in wound treatment.

Our objective was to improve the quality of analgesic monitoring with methods available on site while considering different cultural aspects.

Methodology: We observed how the Buruli ulcer dressings unraveled depending on the different stages of the wound and researched the resources available in a Cameroonian hospital.

Results: We participated in exchanges of the medical team's notions and their knowledge of pain. Then, we carried out training and supervision of pain assessments possible in the context and given a frame of reference on the proper use of analgesics.

We also were able to offer two tables on the proper use of analgesic treatments with their action time for adults and children.

Conclusion: We were able to note that there is a great interest on the caregivers' part for the use of different pain assessment scales and preoccupations concerning analgesics. Moreover, it was beneficial for them to consider the action timeframe of analgesics to improve treatment.

P 228

INTEREST OF A NEW INTERFACE IN THE LOCAL TREATMENT OF ACUTE AND CHRONIC WOUNDS ; RESULTS OF A CLINICAL TRIAL

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Aim: Available for the last 10 years, the lipido-colloid interface was developed to promote the healing process through an every 2 to 4 days dressing change frequency associated to a painfree removal, as widely reported in the literature. In order to improve this existing dressing, a new lipido-colloid interface was developed, different from the previous one by a more conformable backing which easily fits the various anatomic reliefs.

Methods: A non-comparative multicentre clinical study has been undertaken to document the performances of this new interface in the local treatment of acute and chronic wounds, treated and followed four weeks with a weekly investigator assessment (clinical, planimetric and photographic) and a paramedical staff evaluation, at each dressing change.

Results: 44 patients, children and adults, were included (32 with acute, postoperative and burns, and 12 with chronic wounds). Reduction of wound surface area was 78% and 42% for acute and chronic wounds respectively, after the 4 weeks treatment (53% of the acute wounds healed in a mean time of 14 days). Very well tolerated, this new interface, through the 300 nursing care operations, was considered really easier to apply and more conformable than the previous one and more specifically in surgical or paediatric indications.

Conclusions: The results observed in this clinical study have documented the good efficacy, good tolerance and excellent conformability of this new dressing in the treatment of acute and chronic wounds. These clinical data justified the recent availability of this new product to health professionals.

Other

P 229

TREATMENT OF AN ULCEROUS WOUND IN A DEMENTIA PATIENT: STAKES OF HOLISTIC TREATMENT

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Objectives:

Present an approach centered on the adaptation of treatment to the cognitive state of a resident.
– apply the therapy required depending on good practices.
– offer a multidisciplinary treatment supported by a heuristic approach.
– preserve the resident's quality of life.

Method: Analysis of a clinical case
– curative, medication treatment
– accompaniment and behavior strategies
– stakes associated to this treatment in terms of beneficial risks

Results: The complexity of this treatment motivates us to develop a common practice and open the following perspectives:
– list wounds
– form a work group to create treatment protocols
– encourage collaboration with an itinerant network

Discussion: The wound becomes an indicator of the state of health. Complex treatment: difficulties of the resident in expressing themselves, being compliant. Necessity to adapt it by anticipating the risks, elaborate it within a multidisciplinary team with the goal to avoid hospitalization.

Conclusion: The appearance of a wound in dementia residents leads us to call on a specialist. The development of treatment protocol requires a sharing of skills and the adaptation of the protocol with the compliance of the resident.

Necessity to make choices, manage risks.

Bring to light the complexity of treatment required by this type of resident.

Emergence of a common approach centered on the resident and the preservation of their quality of life.

Other

P 230

MANAGEMENT OF VENOUS LEG ULCERS WITH A LIPIDOCOLLOID MATRIX IMPREGNATED WITH NOSF (NANO-OLIGOSACCHARIDE FACTOR): RESULTS OF A CLINICAL STUDY

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Aim: Nano-Oligosaccharide Factor (NOSF) is a new compound aiming to promote wound closure mainly through inhibition of Matrix Metalloproteinases (MMP) present in excess in chronic wounds. This factor is incorporated within a lipido-colloid matrix and locally released in the wound. The objective of this study was to assess the efficacy and the tolerance of a new lipido-colloid absorbent dressing impregnated with NOSF in the local management of venous leg ulcers.

Methods: This study was a prospective, phase III, multicenter (12 centers), non-comparative clinical trial. Patients were followed-up six weeks and assessed on a regular basis (5 clinical evaluations at baseline, D7, D14, D28 and D42), including clinical evaluation, area tracings and photographs.Area of the venous leg ulcers (ABPI ^{3}0.8) was ranged from 3 to 50 cm^2 with a granulation tissue recovering more than 50% of the wound bed.The percentage of the wound area relative reduction (%RR) was the primary efficacy criterion of this study.

Results: 22 patients were selected and treated for a 6 weeks period. Mean wound area at baseline was 9.09 cm^2 and was reduced by an average of 56% at the end of treatment. Complete healing was obtained in 3 patients in an average time of 4 weeks. Four local adverse events considered to be in relation with the tested dressing, occurred during the study.

Conclusion: The new lipido-colloid absorbent dressing impregnated with NOSF, in association with compression therapy, improved the healing of venous leg ulcers.

P 231

THE USAGE OF HYDROFIBER TECHNOLOGY IN MANAGING CHRONIC WOUNDS AND THE MONITORING OF ITS ANTIMICROBIAL ACTIVITY

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Chronic wound gets contaminated with bacteria from the external environment. The infection in the wound depends on microorganism virulence, patient susceptibility, the amount of contaminating bacteria and the aggressiveness of bacterial toxins, and many others. Wound infection leads to decelerated healing and chronic wound stagnation, deepening of the defect, and deterioration of new granulation tissues, soft tissue phlegmona and other complications.

In 2008-2009 100 patients with chronic leg ulcerations of varying aetiology were monitored. Within a month we applied one type of dressing material and we monitored the tolerability, clinical pattern of wound healing and took swabs from wound 3 times according to clearly set criteria – at the beginning of therapy, in 14 days and at the end of therapy. We compared the dressings - hydrofiber technology used as mono and combined therapy, alginates, povidone-iodine materials, materials containing activated carbon and silver, and polyurethanes.

Greatest effects in wounds with microbial colonisation were achieved with silver dressings, povidone-iodine and activated carbon. Material considered appropriate and best tolerated by patients as regards pain, frequency of redressing was a combined material with hydrofiber technology and those containing silver.

Conclusion: combined therapy and combined dressing brings many advantages - improved quality of life of patients, accelerated healing of chronic and stagnating poor healing wounds especially in combination with silver influencing bacterial colonisation of the wound bottom - to the therapy of chronic wounds.

P 232

AN EXPLORATION OF WOUNDS IN AN ACUTE CARE SETTING

Julie Jordan O'Brien[1].

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Background: There is a dearth of information available pertaining to the topical management of wounds. This study set out to understand the nature and severity of wounds managed in an academic teaching hospital.

Aim: To explore the prevalence of wounds and their associated treatment strategies in an acute care setting.

Method: A cross sectional survey was conducted using a predesigned data collection tool. Examining the health care records, all patients with wounds were included. Permission to conduct the study was granted by the Director of Nursing Services. The researcher and a team of tissue viability link nurses were trained and collected the data. Consistency in data collection was ensured through regular auditing of the data collection process.

Results: Of the 629 patients in the hospital, 160 had a wound, yielding a prevalence of 25%. Types of wounds included Surgical = 54% (86), Pressure ulcers = 18% (28) Leg Ulcers Venous = 13% (20), Tube entry 8% (12), Skin Tears = 6% (10), wound dehiscence 1% (2), Diabetic foot ulcer = 1% (2).The majority of wounds were granulating 42% (67). There were 41% (66) assessed using the wound assessment sheet. The average time to change a dressing was between 10 –30 minutes 39% (40) and the frequency was 1-2 days 45% (71).

Conclusion: The nature of wounds encountered was as expected and the choice of dressing treatments were mainly appropriate. In order to ensure a cost effective efficient service it is important to use products appropriately, this is an area that warrants further exploration.

Other

P 233

WITHDRAWN

Other

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WITHDRAWN

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ALCOHOL-BASED DISINFECTANT BURNS IN NINE NEONATES

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Aim: The immaturity of skin renders infants susceptible to burns following relatively brief exposure to disinfectants. Burns in infants have major implications in terms of morbidity.

Methods: We report a case of chemical burns in nine infants caused by solution of benzalkonium chloride. This disinfectant is used for the skin antisepsis prior to injections, punctures and surgical procedures in hospitals, with no restriction to use or obstetric practice. Nine infants (5 females and 4 males) were gestated normally in regional hospital on 10th -11th December, 2009. During 24 hours after gestation skin was wiped with benzalkonium chloride prior to puncture of vein or for hygienic purposes. Inflammation of wiped zones was followed by blistering and ulceration. Affected areas included scalp, neck, armpits, thorax, abdomen, groins. All infants were transfered to University Hospital immediately. 2-15% TBSA chemical burn injuries were diagnosed. Two of them sustained 15% TBSA injuries complicated by infection. In University Hospital wounds were debrided and dressed with advanced dressings. Two sustaining 15% TBSA burn injuries had wound debridement under general anesthesia. For these infants hydrophilic base antiseptic creams were used and wounds were dressed by non-occlusive dressings.

Results: all wounds healed during week after referral to University Hospital. The immediate results and follow up after 3 months are presented.

Conclusion: The case highlights the importance of having a clear policy for skin cleansing in every neonatal unit and measures to avoid errors by vigilant checking of all medications including topical solutions.

P 236

SUPPORTIVE THERAPY WITH BIO-OCCLUSIVE DRESSING AFTER RADIOTHERAPY FOR BASAL CELL CARCINOMA

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Aim: To present the superior therapeutic option for giant basal cell carcinoma, a slowly growing, locally aggressive tumor that metastasizes rarely, if ever.

Methods: A 54-year-old male patient presented first to our Outpatient Dermatologic Oncology Clinic for a tumorous growth present for 7 years on the left cheek skin, with a clinically pronounced erosive tumor process beneath the left lower eyelid and in the nasolabial sulcus region. Multiple biopsies were obtained beneath the left lower eyelid, on the left cheek centrally and in the region of nasolabial sulcus. Histopathologic analysis indicated basal cell carcinoma on biopsy specimens obtained beneath the left lower eyelid and in the region of nasolabial sulcus, whereas the left cheek biopsy specimen showed cicatricial tissue.

Results: Based on histologic analysis, superficial radiotherapy at two sites (beneath the left lower eyelid and nasolabial sulcus) was administered in 21 fractions to up to 5500 cGy. The patient was discharged for home care, with recommendation to apply antibiotic cream and bio-occlusive dressing upon the irradiated area. Gelling Foam Dressing, non - adhesive, is a sterile wound dressing consist of: a top polyurethane foam/film layer, an absorptive non - woven fibrous layer and thin, non adhesive wound contact layer.

At two-month follow up, the patient showed complete epithelialization with excellent cosmetic effect.

Conclusion: Supportive therapy with bio-occlusive dressing following fractionated radiotherapy with soft x-rays is a safe and efficacious therapeutic modality.

Other

P 237

POLYMERIC MEMBRANE DRESSINGS GIVE PAIN RELIEF AND WOUND CLOSURE OF HARD TO HEAL WOUNDS ON THALASSEMIA PATIENTS

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Introduction: Thalassemia is a group of inherited diseases that affect a person's ability to produce hemoglobin. The more severe forms require regular blood-transfusions and extensive medical care.

A screening policy exists in Cyprus since the 1970s and the incidence of this genetic disease has reduced to from1 out of every 158 births to almost zero. Today a majority of the patients are over 25 years-old.

Aim: To evaluate the use of polymeric membrane dressings on hard-to-heal wounds on patients with Thalassemia. We looked at pain-reduction as well as healing.

Method: Three men in their 30's with wounds ranging from 2-5 years were treated with polymeric membrane dressings. After the initial period when the dressings needed to be changed more frequently due to increased exudate level, the patients were trained to change most of their dressings themselves.

Result: All had previously used different types of dressings and skin transplants without managing to close the wounds.

Pain scores as high as 9-10 dropped to 2-3 after a few dressing changes. Two wounds closed within 2 months. Follow-up on one of the patients shows that his wounds have stayed closed for 2 years.

Discussion: This is a difficult group of patients to treat due to their genetic disease. Wound healing is slow, often without expectation of healing. It is exciting for us to have found a successful treatment that also has an effect on pain.

Other

P 238

COMPARISON OF LOCAL ANAESTHESIA FOR SURGICAL DEBRIDMENT

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[1]*Phlebological (siena, Italy)*

Aim: We compare the effect of 3 different anesthetics utilized for topical contact to performe surgical debridment: lidocaine 2,5% and prilocaine 2,5% in cream, liquid solution of lidocaine 2% and mepavacaine 1% too.

Methods: We performed topical anesthesia in two groups of patiens with leg ulcers with multiple etiopathogenesis. The protocol was characterized by three consecutive debridment in the same patient utilizing all the anesthetical choice at random and maintained for 20 minutes in the group A and 15 minutes in group B. The anesthetic was put on the lesion in the cream solution and fpr the liquid was put on a gauzed of the same size of the lesion and in all the case was covered with transparent film dressing.

The effect was valuated from the patient with VAS scale (Visuo-Analogical Scale).

Results: No electrical BISTURI was available in all groups.

In Group A surgical debridment was completed in 81% of the cases (VAS < 4) and in 20% of patients VAS = 0 for all anesthetics. In Group B surgical debridment was completed in 89,5% of the cases (VAS < 4) and in 26% of patients VAS = 0 was recorded for all anesthetics.

Conclusions: Cream solution demonstrated to be the best for anesthesia, but it is the most expensive. Liquid solution showed to be sufficiently useful for surgical debridment and better at 2% of concentration. (mean VAS 1,87 cream vs 2,43 and 2,58 liquid solution).

P 239

AN INTERNETBASED CLINICAL DATABASE*. EXPERIENCES AND OUTCOME

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Aim: The aim was to develop a tool for cross-sectional communication and documentation in the treatment of patients with chronic wounds.

Method: Using a mobile telephone and access to the internet, relevant data is transmitted to the database. The data are made available for the health care task force set up for that particular patient, incl. the patient. By an sms the doctor gets notification that new data has been entered on a particular patient. This counts as a remission and by looking into the database, an appointment at the out-patient clinic is made.

In the out-patient clinic final diagnostic investigations are made and a plan for treatment outlined. The woundcare nurse receives a sms.

Results: Data 1257 on wounds in 918 patients are now available. We can document a healing rate, for those healed and complete dataset, of 14,4% per week for venous leg ulcers (n= 166), 16,5% per week for posttrombotic ulcers (n=39) and 26,4% for traumatic ulcers (n=124) as online results.

Conclusion: We believe, that by making a prober diagnosis at an early stage and the possibilty for urgent interventions explain our good results concerning healing rates. In the out-patient clinic, patients are only seen for prober diagnosis or in case of deterioration. No rutine consultations give room for new appointments within days. Expences for transportation is reduced, as the patients are treated in their own homes in collaboration with the specialist at the hospital using IKT.

* www.saarbase.dk

P 240

THE FATE OF CRYOPRESERVED FAT ASPIRATES AFTER IN VIVO TRANSPLANTATION

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The purpose of this study was to find out the effectiveness of the cryopreserved fat tissue and the difference among the cryopreserved fat tissue at the temperature of the -20°C, -80°C & -195°C and fresh fat tissue. Human adipose tissue obtained by Coleman methods were divided into two groups, the fresh control group and the cryopreserved experimental group.

In the fresh control group, fat was grafted immediately after fat harvesting and successive centrifugation. In the cryopreserved experimental group, fat was refrigerated at the temperature of the -20°C, -80°C & -195°C correctively for 8 weeks. Just prior to grafting fat tissue, measurement of cell viability was performed using the XTT test for mitochondrial activity. In each group, 0.4 mL fat tissue was grafted subcutaneously into the back of 8-week-old nude mice. Eight weeks later, grafted fat was harvested. The weight, the volume and histologic examination using hematoxylin-eosin and 4',6-diamidino-2-phenylindole of grafted fat were measured.

Fresh control group showed the effectiveness just over 50 percentages of grafted fat, and the cryopreserved experimental groups showed the one around 40 percentages of grafted fat.

There were no significant differences among three experimental temperature groups.

The results of this experiment should be helpful to study the grafting with cryopreserved fat tissues and to make the reference materials for clinical applications.

Other

P 241

THE EFFECT OF SPHINGOSINE-1-PHOSPHATE IN MICROFAT GRAFT

Yong Chan Bae[1], Dong Ju Yoon[1].

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Autologous fat grafting is a popular procedure for the correction of soft tissue depression and deformity, but several issuses require attention, including unpredictability and a low survival rate due to absorption and partial necrosis. Sphingosine-1-phosphate (S1P) is a lysophospholipid mediator which has been proposed to promote angiogenesis and regulate differentiation of adipose derived stromal cells (ASCs). In this study, I analyzed the viability of grafted fat tissue with S1P in 12 nude mice (cann.cg-fox1nu/crlori) compared to grafted only.

Human aspirated fat was grafted subcutaneously into the back of 8-week-old nude mice with or without S1P. Eight weeks later, grafted fat was harvested, checked weight and volume and stained with hematoxylin-eosin and 4',6-diamidino-2-phenylindole.

S1P group weighed significantly more than control group (p= 0.009). S1P group volume was significantly larger than that of control group (p= 0.004). In histologic features, surviving layer of S1P group was thicker than control group and microvasculature was appeared to be prominent in S1P group, especially in the outer layers.

These findings suggest that S1P plays a significant role for soft tissue augmentation, potentially providing a novel point of control in adipose tissue for microfat graft.

Other

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EVALUATION OF A HYDROGEL FOR MOIST DESQUAMATION SKIN REACTION FROM RADIOTHERAPY

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Aim: A hydrogel is recommended as an option for the treatment of moist desquamation (NHSQIS, 2004) and have been explored for this use in other radiotherapy treatment centres (Macmillan et al, 2007). Following a change to the wound care formulary and product availability in NHS Greater Glasgow & Clyde, an evaluation of a hydrogel was undertaken to assess product characteristics and patient experience when used as the skin care intervention for moist desquamation from radiotherapy.

Method: Over a four week period, thirty six patients identified to have moist desquamation (RTOG 2b and RTOG 3), dry desquamation (RTOG 2a) where the skin was on the verge of breaking down, or a combination of both, were evaluated when using the chosen hydrogel as the skin care intervention.

Results: Use of the product delivery system was evaluated overall to be excellent (30/36, 83%), or very good (3/36, 8%).

Conclusion: Results demonstrate the product to have favourable product characteristics and to be suitable for use by patients who self care for their radiotherapy reaction. Evaluation of the impact on healing time for radiotherapy skin reactions and ability to rehydrate the skin was out with the scope of the evaluation but would be of further benefit to assess the efficacy of this in radiotherapy skin care.

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THE 3-D SCANNING WITH COLORIMETER; AN EASIER METHOD OF WOUND'S MOUSE LABORATORY MEASURES

Olivier Vanhooteghem[1-2], Pascal Blain[3], Vincent Moreau[3], Frederic Michel[3], Michel De La Brassinne[1-2], Alain Colige[4], Yvon Renotte[3], Serge Habrakken[3].

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[2]*Department of Dermatology, Sainte Elisabeth Hospital (Namur, Belgium)*
[3]*HOLOLAB, Faculty of Sciences, Bat. B5a, University of Liège (Liège, Belgium)*
[4]*Laboratory of Connective Tissues Biology, GIGA-R (Liège, Belgium)*

Evaluation of healing requires the quantitative and qualitative analysis of wounds, ideally using a non invasive method. 3D optical scanning system allows is a noninvasive and reproducible analysis of wound. It can be used for time course evaluation of color, surface size, outline, depth and volume.

The 3D reconstruction of wounds is based on fringes projection analysis. The system is composed of a color camera CCD with a laser wavelength centered filter. A 532 nm laser with 500mW maximum power is used. The measurement precision is about 0.05 and 0.5 mm, the measurement distance between wound and laser is about 0,10 and 1,50 m, the acquired surface can be measured between 50 and 500 mm2, the field Depth is about 20 and 200 mm and the resolution is 106 points.

This technique can be incorporated in wound‘s mouse laboratory studies of dressing efficiency, either drug-containing dressing in an objective and rigorously reviewing way before to use it in human studies.

P 244

AN EVALUATION OF THE MANAGEMENT OF FAECAL INCONTINENCE IN TWO INTENSIVE CARE UNITS

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[1]*University of Huddersfield (Huddersfield, United Kingdom)*

Aim: To discuss the results of a project undertaken evaluating current practice of faecal incontinence (FI) management in two intensive care units (ICU).

Methods: A systematic rapid appraisal in the management of FI in acute settings and observation of current practice in the ICU's recording prevalence and aetiology of FI during a three month time frame. A clinical case-series evaluation was performed, using nursing staff observation and an audit data collection. Patients who had FI, had a range of observations recorded, aggregated for a 24hour period. Total in-patient and nursing staff skill mix was recorded, to estimate prevalence of FI. Descriptive analysis was performed.

Results: In the three month period a total of 45 patients were recorded as having FI, with a total in patient no. of 201. Prevalence of FI was 22%; mean age of patients with FI was 63. There was less pre-existing FI in patients, who developed FI, noted before admission. The most frequent amount of episodes of FI reported in 24 hours was between 2 and 5, mean 3.89; mean Waterlow score for patients with FI, was 20.45.

Conclusions: The prevalence rate of FI indicates there is a significant implication for nursing practice and training. Themes have emerged in the clinical decision-making processes in terms of choices for management of FI in ICU leading to the development of an intervention protocol. The high Waterlow scores for patients with FI in ICU suggest that there is a significant tissue viability risk.

Case Study

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STEVEN JOHNSON SYNDROME

Maribel Forteza[2], Asumpta Alier I Vila[1], Dolors Allmirall Solsona[2], Eva Zapater[2].

[1]*Smith & Nephew (San Joan Despí, Spain)*
[2]*Hospital General de Vic (Vic, Spain)*

Aims: To assess the performance of a new silver sulfadiazine hydrocellular dressing in the management of a patient suffering from Steven Johnson syndrome.

The primary objective was to assess the overall clinical acceptability of silver sulfadiazine Hydrocellular and nanocrystalline silver dressings for this indication.

Methods: We present a case study of a patient suffering from this syndrome; the intake of a drug appears to be the trigger.

Local treatment: To debride most of the blebs spread throughout the body (70% body surface area).

The wide area covered with nanocrystalline silver in order to protect skin exposed to opportunistic infections and is protected with hydrocellular dressings to hold moisture, facilitating the release of silver ions and relieve pressure on wounds.

The small scattered lesions covered with hydrocellular dressings containing silver sulfadiazine that manages the exudate and releases silver

Results: The first treatment was initiated in January of 2009.

After the first week it was observed a good evolution of the wounds showed large amount of exudate, a red bed and no signs of local infection.

After fourteen days most of the wounds are epithelizated and the patient is better for respiratory infection.

Conclusions: The new silver sulfadiazine hydrocellular foam dressing was effective in improving wound outcomes in conjunction with routine clinical practice.

The new hydrocellular dressing with silver sulfadiazine resulted to be very comfortable and effective as an antimicrobial, providing pressure relief and exudate management

The results were satisfactory for the patient and for the professionals who treat them.

Case Study

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TREATMENT OF STEVENS-JOHNSON

Camila Marcadenti[1], Rosélie Corcini Pinto[1], Francisco Tostes[1], Vânia Declair Cohen[1].

[1]*Irmandade da Santa Casa de Misericórdia de Porto Alegre (Porto Alegre, Brazil)*

The Stevens-Johnson syndrome is a severe, sometimes fatal. Patients with this syndrome require intensive care because they feel too much pain to each manipulation and lose too much fluid due to the discontinuity of the skin, being highly successors to infections.

Aim: Reduce number of dressing changes to promote comfort and healing the skin.

Case report: A female patient, 29 years old, white, smoker, treated for epilepsy for eight years with carbamazepine 200mg twice daily. Diagnosis of Stevens-Johnson. Started with oral mucosal and ocular lesion in September 19, 2009. Carbamazepine was discontinued and replaced by benzodiazepine. Admitted in the intensive care unit in September 25, with bullous lesions all over the body and respiratory infection. On October 02, initiated the use of silicone screen at points of rupture of the blisters, leaving the entire body mummified with bandages, with daily changes. In October 07, replaced the traditional dressing with bandages by thin foam with inner layer of silicone and hight capacity exsudate transfer, remaining for seven days. The objective was to reduce the number of dressing changes, reduced pain and risk of infection. Six days after, the skin was epithelialized. Remained only a few injuries in the legs, which continued to do dressings silicone screen.

Conclusion: The use of foam covering and silicone acted positively in the treatment of lesions of Stevens-Johnson syndrome, reducing pain and healing time of injuries. The patient left the intensive care unit on October 23, 2009.

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WITHDRAWN

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NANOCRYSTALLINE SILVER DRESSING IN THE MANAGEMENT OF PYODERMA GANGRENOSUM COMPLICATING ULCERATIVE COLITIS

Sang-Ha Oh[1], Nakheon Kang[1].

[1]*Chungnam National University, Collage of Medicine (Daejeon, Korea, Republic of)*

1) **Aim:** Pyoderma gangrenosum, which is frequently associated with systemic diseases such as Crohn's disease and ulcerative colitis, is a rarely cutaneous lesion. Since it appears through uncontrolled immune or inflammatory reaction, long-term immunomodalatory and immunosuppressive therapy is necessary which increases the risks of infection and sensitivity to irritation. Even though many treatments are introduced, managements of the lesion are still on debate.

2) **Methods:** Female patient (Fig. 1) diagnosed with ulcerative colitis was requested for pathological treatment with pathology chronic exduate in left leg for approximately 5 months (Fig. 2). The normal wound treatment did not improve the condition regardless of the progress of the ulcerative colitis. So we started outpatient treatment using Nanocrystalline silver dressing. To minimize the maceration and the stimulus Nanocrystalline silver was soaked in saline solution and was safely removed and was exchanged in 2 to 4 day interval depending on the condition of the exduate.

3) **Results:** Along the 8 weeks of treatment the skin recovered itself. The pathology showed stable healing progress without any secondary infection or relapse during the treatment (Fig.3-6).

4) **Conclusions:** Nanocrystalline silvert can effectively prevent secondary infection and is less invasive and require lesser amount of exchange for material, thus reducing the pain for patient. The material can serve as a useful material for wound management, especially in treatment and management of chronic skin disease with sensitive immune system to stimuli.

Fig. 1. Colonoscopy shows diffuse ulceration, edema and scarred mucosa.

Fig. 2.

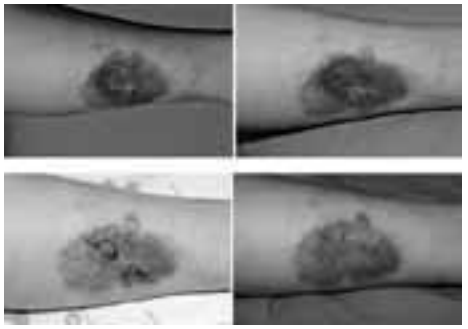

Fig. 3-6.

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LEG CONQUASATION TREATED WITH LOCAL FLAPS AND TOPICAL NEGATIVE PRESSURE

Franjo Rudman[1], Zdenko Stanec[1], Srećko Budi[1], Rado Žic[1], Rudolf Milanović[1], Zlatko Vlajčić[1].

[1]*Department for plastic surgery, University Hospital «Dubrava» (Zagreb, Croatia)*

It is a presentation a case of a complex leg injury caused by fall under harvester. There was complicated tibial and fibular fracture with massive loss of muscle and skin and injury of peroneal vessel. Initially radical wound debridement, bone stabilization with external fixation, reconstruction of peroneal vessel and coverage of denuded bone with local muscle flaps was preformed. Furthermore most of the defect was primarily covered with split thickness skin graft. In distal part of leg large defect of soft tissue persisted. 5 days later topical negative pressure was applied over the subsequent skin and soft tissue defect. After three weeks defect in distal part of leg was filled with thick granulation tissue and split thickness skin graft was applied.

A month after injury there was complete healing of all soft tissue, bone healing was prolonged because of bone infection that was controlled with successive orthopaedic procedure.

Topical negative pressure alone or in combination with other reconstructive techniques can be utilized in acute treatment of mangled extremity with great success

Case Study

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FREE FLAPS IN TREATMENT OF COMPLEX HEEL DEFECTS

Franjo Rudman[1], Zdenko Stanec[1], Srećko Budi[1], Rado Žic[1], Rudolf Milanović[1], Zlatko Vlajčić[1].

[1]*Department for plastic surgery, University Hospital «Dubrava» (Zagreb, Croatia)*

The heel, the skin, and the calcaneus as a whole play an important part in weight bearing, and their loss means the foot loses its walking ability.

In the Department for Plastic Surgery, Clinical Hospital “Dubrava” since 1995. there were 12 patients treated for heel defects. The causes of heel defects were injury in 11 patients while one patient was treated for neurothrophic ulcer. In 2 patients there was severe loss of calcaneus and in 2 patients there was concomitant Achilles tendon defect. 2 patients with loss of bone were reconstructed with iliac crest osteocutaneous free flap and with forearm osteocutaneous free flap. In 2 patients with Achilles tendon defect, composite forearm osteocutaneous free flap with incorporated palmaris longus tendon were utilized. In the reminder of patients with soft tissue defects 2 latissimus dorsi musculocutaneous, 3 forearm fasciocutaneous, a 3 anterior lateral thigh perforator flaps were used. Functional results are very good, and each patient is able to perform ambulation without assistance. There was no flap loss, and only minor complications were encountered.

Functional and esthetic reconstruction of the bony and tendinous structures with a stable, sensate soft tissue integument after complex posttraumatic defects of the heel is demanding. Cases of heel reconstruction are rare in the literature and hardly comparable due to their diversity. The reconstructive approach has to consider both patient profile and the reconstructive tree, with free microvascular flaps playing a primary role.

P 251

BIOFILM AND SKIN COMPLICATIONS DUE TO NUTRITIONAL CUTANEOUS OSTOMIES: LOCAL TREATMENT WITH PHB WOUND GEL. CASE REPORTS

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Aim: Local treatment and recovery from skin complications of gastrostomic nutritional ostomies, using Polyhexanide-Betaine (PHB) Wound Gel 0,1%.

Methods: After assessment, SACS classification, and after adequate cleansing, the Polyhexanide-Betaine (PHB) 0,1% Gel has been regularly applied on the peristomal skin of complicated gastrostomic nutritional ostomies (dermatitis, infections, and diastasis). In all cases presented, no antiseptic substances have been used. Dressing in TnT multilayer or polyurethane foams have been used as secondary dressings. Cutaneous protection has been applied outside the treated area. Often, the use of PHB Wound Gel 0,1% on the wound was delegated, after specific training, to caregivers. The assessment and substitution of the dressing has been done every one or two days by home nurses; weekly assessment has been done by the nutritionist nurse, expert in wound care.

Results: Patients with cutaneous wounds caused by gastrostomic nutritional ostomies of various degrees, included cutaneous Candidiasis, have been profitably treated at home. Average recovery time has been of about 10 days. In all cases, a reduction in pain, absence of collateral effects, easy and effective cleansing of the wound, and fast recovery has been observed.

Conclusions: Qualified professionals, constant, correct and early use of specific products, such as PHB, can reduce the presence of biofilm on peristomal cutaneous wounds. This can accelerate the healing process, enhancing the patient's quality of life, and reducing times and costs of the medical and nursing assistance.

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PRESSURE ULCER EVOLUTION AND ITS RELATED COST CASE STUDY

Sandra Dudziak[1], Patricia Carlson[2,] **Deanne O'rourke**[1], **Heather Nelson**[1]

[1]*Revera inc. (Cambridge, Canada)*
[2]*3M (London, Canada)*

Introduction: Prevention and management of pressure ulcers is one of the greatest challenges in long term care (LTC). A nationwide search of data, 1990 – 2003, shows 29% of this population is expected to develop some form of pressure ulcer.1

Objective:
1. Identify internally acquired wounds and monitor their evaluation overtime; and
2. Identify cost outcomes.

Methodology: Study setting:
1. 16 Revera LTC homes across Canada.
3. Application of a standardized wound care management program
4. Weekly wound documentation and costs per dressing change was completed using a standardized tool.

Residents:
Inclusion Criteria
- Permanent Resident in LTC
- The Resident had developed a Stage II Pressure Ulcer.

Exclusion Criteria
- The Resident not a permanent Resident (short stay)
- Did not include Skin Tears, Arterial, Venous, Diabetic ulcers and/or Malignant wounds

Length of the study: 12 weeks (all pressure ulcers Stage II wounds developed within a 12 week period were followed)

Results:
Total number of wounds studied: 12
The number of days for wound closure was between 5 days to 84 days. An average of 30.25 days
The weekly cost for treatments applied was between $9.44 and $108.81. An average of $25.42 per wound
The total cost incurred was between $9.44 and $1146.82. An average of $220.90 per wound
1 out of 12 wounds deteriorated – became infected.

Summary: The implementation of a standardized program contributed to a positive outcome for wound closure, and had a positive impact on costs.

Case Study

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TREATMENT OF CHRONIC ULCERATION WITH WOUND BED PREPARATION CONCEPT COMBINED WITH LOW-ENERGY LASER THERAPY A REPORT OF TWO CASES

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[1]*Cheng-Hsin General Hospital (Taipei, Taiwan)*

Aims: We would like to develop a regimen based on wound bed preparation concept to evaluate the efficacy and safety of low-energy laser therapy for the poorly-healing lower leg ulcers.

Backgrounds: Case one: a woman with heart failure and coagulopathy, suffered from an ulcerative wound on her left leg for months. It was 8.5 x 2.5 cm, necrotic with eschar, and odorous. Case two: a young man with long-time standing at work developed an ulcerative wound on his left leg for months. It's 16 x 6 cm, necrotic with eschar, and odorous.

Methods: For tissue management, we cleaned the wound with normal saline, removed the necrotic tissue and eschar, and chose the proper dressings. For infection/ inflammation, we applied the low-energy laser at outpatient clinic, with the dressing with topical antibiotic or a hydrofibre dressing*. For moisture balance, we dressed the wound with foam dressing and a hydrocolloid dressing**. For protection of the wound edge, we cleaned the surrounding wound skin with normal saline and pasted with barrier cream or a soft silicone foam***.

Results: The 4-week courses of wound care were done in our outpatient clinic. Their wounds both healed completely. Although case one died of heart failure three months after the wound healing, she appreciated the healed wound and the preserved leg. Case two also applied plastic socks and bandage on his legs for long-time standing at work.

Conclusions: Our regimen can offer the best wound care with the non-invasive approach.

*Aquacel Ag, **DuoDerm, *** Mepitel

Case Study

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ASSESSMENT OF "NEW" ANTI-BEDSORE SUPPORTS IN VARIOUS TREATMENT LOCATIONS

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[1]*Haute Ecole de Santé (Genève, Switzerland)*
[2]*Centre Hospitalier Valence (Valence, France)*

Purpose: Assess if the use of inflatable, inexpensive and simple to use supports have a positive effect in the prevention and treatment of bedsores. A French hospital is linked with a medical school for the experiment.

Method: Implementation of various polyurethane devices for patients that are at risk for developing a bedsore or already have bedsores.

The supports, never tested in our practice, are implemented and assessed for a duration of 8 weeks. Photographic monitoring is carried out. A protocol is completed by the medical professionals at the beginning, middle and end of the monitoring. It is accompanied by a user's guide.

19 people treated in Geneva, essentially in medical-social establishments, were part of the project. In Valence, the hospital tested them on 10 patients.

Results: At this stage in the assessment, these tools revealed to be conclusive in several points:

The medical teams appreciated their manageability and ease of use. They recorded encouraging results in the improvement, even healing, of bedsores.

The patients described the comfort of these different materials.

Discussion: Are these methods as effective as other preventative or therapeutic supports? Is the decrease in pressure real, despite the simplicity of the system?

Conclusion: This assessment was essentially visual. For it to be valued as a study, pressure detectors would need to be used during the implementation of the material, and randomize two groups: one that uses these supports and another that doesn't, even a different one.

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TEN CASE STUDIES ON THE USE OF A TWO LAYER BANDAGE IN THE TREATMENT OF CHRONIC LYMPHOVENOUS OEDEMA

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[1]*CNS Lymphoedema, Centre for Research and Implementation of Clinical Practice (London, United Kingdom)*
[2]*Laboratoires Urgo (Shepshed, United Kingdom)*
[3]*Laboratoires Urgo (Chenove, France)*

Aim: Ten case studies were undertaken to examine the experience of using a two layer bandage (2LB) for the treatment of patients with chronic venous oedema secondary to venous disease (lymphovenous).

Methods: The purpose was to determine the reduction in chronic oedema using the 2LB, compared to that with compression hosiery after a week, wearing a different system on each leg.

All interface pressure recordings (using a kikuhime monitor) and the application of the 2LB were made by the same clinician.

Ankle and calf circumference measurements were taken both pre and post bandage application, the difference between the two determining the reduction in venous oedema.

Results: Interface pressures showed the bandaging to be consistent within the correct recommended pressure range 34–41 mmHg. No excessive pressure was recorded for any patient.

The 2LB was associated with a reduction in limb circumference, indicating a removal of chronic lymphovenous oedema, without any bandage slippage. Three patients did not require hosiery on their second leg and of the remaining 7, only 3 showed any leg volume reduction. Most patients found the system comfortable, supportive and were able to wear normal footwear. The nurse found the 2LB easy to apply.

Conclusions: The 2LB has the potential to be an effective system for the compression of patients with Lymphovenous oedema with a choice of sizes (18-25 cm and 25-32 cm) and widths (8, 10 and 12 cm). Patients reported that it would allow for self-management which is particularly beneficial for young, active patients requiring compression therapy.

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EVALUATION OF A HONEY AND SILVER BASED PREPARATION IN THE TREATMENT OF CHRONIC WOUNDS

Denis Salomon[1], **Carolyn Wyndham-White**[2], Chantal Rosser[2], Néda Barouti[1].

[1]*Hôpitaux Universitaires de Genève- Hôpital Cantonal (Genève, Switzerland)*
[2]*Haute Ecole de Santé (Genève, Switzerland)*

Aim: The use of honey in wound care is becoming popular and can be less expensive than other products. Both antiseptic and healing properties of honeys vary according to their source. To maintain the antiseptic activity, silver ion is incorporated. The tolerance and efficacy of this preparation has been evaluated in an open study.

Methods: A single center based clinical trial on patients presenting no improvement of their wounds for the previous 2 months, were selected. The evaluation of the wound was carried out by clinical observation and photography.

Bacteriological contamination/infection of the wound prior to the first application of silver-honey was evaluated. Wound dressings were changed every 2 or 3 days, depending on wound exudates.

Results: 15 patients were treated, 2 healed completely, 6 showed 75% improvement, 1 patient did not improve but showed no significant bacterial colonization. The protocol had to be stopped for 6 patients, between the 2nd and 3rd week due to severe pain even though an improvement of the wound was observed for 4 of them.

Conclusion: Silver honey can be easily used with minimal cost in material and nursing time. The number of cases studied up to now is limited, however we estimate that silver-honey significantly improves therapeutical outcomes for difficult to heal, chronic wounds. The major limitation of this treatment is the pain felt by one third of the patients.

Case Study

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PERTINENCE OF REVISING THE NURSE DIAGNOSIS "INTEGRITY IMPAIRMENT OF THE SKIN" THROUGH THE EXAMPLE OF A BEDSORE

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[1]*Etudiante Haute école de Santé de Genève (Genève, Switzerland)*

Aim: Based on the work of the diagnostic nurses at Nanda International, limits concerning the formulation of the nurse diagnosis nurse "Integrity impairment of the skin" can be highlighted. Using the concrete situation of a person presenting a bedsore, we propose possible axes of revision regarding this diagnosis.

Methods: Supported by research literature, we will identify the characteristics that we will illustrate by the presentation of a clinical case using the example of a bedsore.

Results: Propose an update of this diagnosis based on probative data.

Conclusion: This work allowed us to develop methodological, clinical and scientific skills.

Case Study

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EVALUATION OF A GELLING* FOAM DRESSING ON A VENUS LEG ULCER UNDER COMPRESSION BANDAGE FOR 7 DAYS- A CASE STUDY

Tsipi Cahan[1].

[1]*Clalit Health Services (Jerusalem, Israel)*

1) **Aim:** The aim of this abstract is to show that by choosing the appropriate treatment that includes a dressing with the feature of optimal exudate control combined with compression bandage for 7 days, the healing of the wound was faster.

2) **Methods:** For the evaluation case study, gelling foam composite dressing combined with compression bandage was selected.

We selected a patient with a VLU difficult to manage who traditionally treated before. The current plan of treatment was the combination stated above.

3) **Results:**

a. The wound was completely healed after 5 weeks of treatment.
b. The pain that existed in the wound stopped and the patient discontinued consuming analgesics.

4) **Conclusions:** This case study demonstrates that the combination of treatment with unique gelling foam dressing and compression bandage left for 7 days; provide a faster healing for VLU.

Dressing's changes once a week lead to a better compliance of the patient and also results in cost-effectiveness of the treatment.

Product Notation
*Versiva® XC® dressing

P 259

MAGGOT THERAPY: OUR EXPERIENCE UTILIZING THEM FOR THE TREATMENT OF NECROTIC LEG ULCERS

Varda Suchi Swager[1].

[1]*Rambam Health Care Campus (Haifa, Israel)*

O.N. is a 55-year-old female suffering from SLE since the age of 14, including severe vasculitis.

She was admitted to the Rheumatology department due to severe painful necrotic wounds with signs of inflammation on the right leg, and systemic fever. Tissue culture showed klebsiela morganela bacterium. She was treated with Ilumidil, steroids and Clexan. The wounds were first treated with natrium hypochloride solution, which she couldn't tolerate. The treatment has been changed to hydrogel and calcium alginate to minimize the pain and help the autolytic debridement of the wounds. There was no improvement in the local condition of the wounds, and she has been suffering intractable pains.

Each treatment was accompanied by stress, fear and concern from the patient and her husband. A multi-disciplinary team was involved in the treatment.

We thought that the treatment of maggot would help for debridment of the wounds and to minimize the pain.

We would like to present our first experience treating severe wounds with maggots and the difficulties encountered by the multi-disciplinary team while treating Mrs. O.N until she was discharged from the hospital after a successful skin grafting.

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THE MANAGEMENT OF A CHRONIC PRESSURE ULCER; COMBINING A TRILOGY OF DEBRIDEMENT, DRESSINGS A THIN HYDROCOLLOID, HYDROFIBER RIBBON DRESSING AND A GELLING FOAM DRESSING) AND REDISTRIBUTION OF PRESSURE

Maria Hughes[1].

[1]*NHS Wirral (Bromborough, United Kingdom)*

Abstract:The management of a chronic pressure ulcer using a combination of debridement, dressings and redistribution of pressure.

Method: A pressure ulcer graded as a potential EPUAP Grade 2/3, due to an inability to assess the wound bed attributable to the level of necrosis was selected.

08/04/09
On initial assessment the wound presented with 100% necrotic tissue, slight peri–wound oedema and erythema. The main objectives were removal of the necrotic tissue, improvement in nutritional state, implementation of a dynamic mattress and repositioning regime.

22/04/09
Use of a hydrocolloid dressing and conservative sharp debridement facilitated removal of the necrotic eschar. A change in dressing regime was changed to hydrofiber ribbon and hydrofiber gelling foam dressing to manage the consequential wound cavity.

06/05/09
Vast improvement was noted in the entire wound.

11/06/09
Wound showed significant signs of healing. The patient found the dressings comfortable and pain free on removal.

Results: 06/07/09
Wound was progressing remarkably well. The base of the wound was granulating and the wound edges were in optimal condition.

At final review, Matron had felt the wound had healed however sadly the patient passed away the previous night.

Conclusion: Chronicity, complex wound symptoms, and anatomical location often present pressure ulcers as a challenge. In conjunction with patient concordance, pressure redistribution & holistic management, this case study illustrates an effective dressing regime that enhanced autolytic debridement and exudate management, which progressed the wound towards healing rapidly.

Case Study

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TREATING INFECTED WOUNDS WITH A HYDRO BALANCE DRESSING CONTAINING PHMB*

Bettina Gunst[1], Anneke Andriessen[2].

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[2]*Andriessen consultants (Malden, Netherlands)*

Aim: An infection may be at the origin of persistent wounds. In the elderly, it can have significant repercussions because the organism is already weakened.

The hydro balance with PHMB* (polyhexamethylene biguanide) dressing is capable of absorbing exudates while maintaining the necessary humidity for the wound. They also procure an antimicrobial effect.

The objective is to heal these wounds with a dressing while avoiding antibiotherapy by general means of which the side effects can be non-negligible in the elderly.

Methods: 98 year old patient admitted with a history of coronopathy, arrhythmia with auricular fibrillation, under nutrition.

Following a fall, he presented dermabrasions on the hand, arm and elbow.

24 hours after the application of a classic dressing (interface type), this man presented edema in the hand, inflammation and significant pain.

The presence of a nauseating, greenish discharge lets us assume infection.

We used the hydro balance with PHMB* dressing to avoid general antibiotherapy.

Results: The hydro balance with PHMB dressing allows a real decrease in inflammation, discharge and pain.

The comfort of the dressing is very appreciated by the patient.

Budding was carried out correctly, the wound healed in a few weeks.

Conclusion: The hydro balance with PHMB* dressing showed a significant antimicrobial effect in this case.

Its application may be useful in handling infected wounds.

*Suprasorb X+PHMB, Lohmann & Rauscher GhmB

Case Study

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TREATING A WOUND AND TWO BEDSORES WITH A SUPERABSORBENT* DRESSING

Marc Wiser[1].

[1]*Centre Hospitalier Unité de Soins de Longue Durée (Melun, Switzerland)*

Aim: The objective was to study if a superabsorbent* dressing could be used as a primary dressing on superficial exudative wounds.

Material and methods: Case of an 82 year old patient presenting a right femur neck fracture following a fall equal to their height.

The orthopedic treatment was complicated by the appearance of left heel support and right malleolus bedsores and a rangy wound on the posterior face of the right calf.

After cleaning, we placed a superabsorbent dressing on the three sites which presents a high level power of absorption and exudate retention.

Results: The result was very satisfying with the wound located on the calf: disappearance of fibrin and appearance of granulation tissue in 3 days, painless changes, complete healing in 25 days. For the bedsores, even though less spectacular, the results were nevertheless interesting: disappearance of fibrin, appearance of good quality buds, but a change in protocol is necessary before the appearance of maceration linked to a very significant exudate.

Conclusion: Despite the good results regarding budding for the malleolus bedsore especially, the association of alginate with the superabsorbent dressing would have probably improved healing while significantly decreasing exudation.

We were very satisfied with the results of this product for the treatment of the superficial wound of our patient. Complete healing was obtained in 25 days.

This product seemed interesting to us as a primary dressing in the treatment of superficial wounds.

*Vliwasorb® Lohmann & Rauscher GmbH

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TREATMENT OF A REINFECTED VENOUS ULCER WITH A HYDRO BALANCE DRESSING CONTAINING PHMB*

Marc Wiser[1], Caroline Van Wijk[1].

[1]*Centre Hospitalier Unité de Soins de Longue Durée (Melun, Switzerland)*

Aim: The objective of the study was to study the effect of a non-adhesive hydro balance* dressing with PHMB (polyhexamethylene biguanide, active antiseptic for numerous germs) on a very difficult to heal infected venous ulcer.

Materiel and methods: 78 year old patient of West Indian origin of which the principal history includes significant excess body weight, chronic venous insufficiency and hypertensive cardiopathy. The patient suffered for many years of ulcerous wounds in the lower limbs, of which the most difficult to heal were located on the ankles.

We alternated improvement phases after cleaning and reappearance phases of fibrin and infection (pyocianic and staphylococcus aureus).

Results: Daily dressing repair proved to be necessary for this very productive wound.

We noted a rapid disappearance in odor and a good control of exudates with an acceptable maceration of edges.

This change proved to be painless and not very traumatic, with the respect of regeneration tissues.

In ten days, reepidermization was obtained by the edges and especially at the bottom of the wound.

Complete healing of these two ulcers was obtained in 45 days.

Conclusion: The hydro balance dressing* allowed us to heal 2 venous ulcers in the lower limbs that had been reinfected for 2 years. This type of dressing seems to be an interesting alternative to silver for the treatment of infected or critically colonized wounds.

*Suprasorb® X+PHMB – Lohmann & Rauscher

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TREATMENT OF CUTANEOUS RADIONECROSES WITH A COLLAGEN* DRESSING

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Aim: Cutaneous radionecroses are chronic wounds that are difficult to treat and often result in a healing impasse for a long period of time.

A biochemical imbalance of fibrinonecrotic ulcerations that remain in an inflammatory phase for months or even years.

Fragile, perilesional skin, site of fibrosis, atrophy, induration, etc.

The preparation, wound bed conditioning, granulation and epithelialization of the radionecrosis remain a challenge in healing.

Methods: The dressing used for cleaning the wound bed and stimulating reparation is a hydroactive* collagen sponge, composed of a porous structure. It is used as a primary dressing covered by a secondary classic dressing.

The collagen dressing was used in two patients with exudative radionecrosis in a therapeutic impasse for more than five years.

Dressing changes were carried out every 24 hours.

Results: The results displayed a good overall tolerance, ease of use, healing of one of two radionecroses and the cleaning, granulation of the other.

Conclusion: The collagen* dressing allows
- to absorb the exudate containing pro-inflammatory substances
- the cleaning and preparation of the wound bed
- the restoration of the biochemical balance
- the stimulation of the healing process

Collagen dressing *Suprasorb® C – Lohmann & Rauscher GmbH

Case Study

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AUTOLOGOUS PLATELET GEL WOUND THERAPY SUPPORTED BY A NEW CLEAR ACRYLIC ABSORBENT DRESSING

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The clinical use of crude platelet preparations has been around for decades. However, the use of Autologous Platelet Gel (APG) for the treatment of wounds has become common practice in only the past 10 years. The use of platelet gels have been associated with accelerated neo-angiogenesis, increased fibroblast proliferation, and accelerated collagen production. (1)

In a porcine wound healing model with deep partial thickness wounds, Ramon et al1 showed that wounds treated with APG enhanced the rate of epithelization as compared to both polyurethane and untreated controls.

Using an economic model to evaluate the clinical outcomes and costs associated with APG to treat non-healing diabetic foot ulcers, Platelet Rich Plasma (PRP) gel was found to result in better treatment outcomes, improved quality of life, and lower cost of care compared to other currently used modalities. (2)

Despite these good results reported with APG, we found wound exudation to be a particular problem. Exudation may become a difficulty for the patient and caregiver if the quantity produced and/or its composition delays or prevents wound healing, if it causes physical and psychosocial morbidity, or if it increases demand on healthcare resources. (3)

The ideal dressing would absorb excessive wound exudate, promote moist wound healing, and reduce leakage. We have to admit that our current approach did not live up to this ideal. We therefore tested the use of APG with a new clear acrylic absorbent dressing. (4) We report our preliminary results via a series of case reports.

Case Study

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CHRONIC LYMPHOEDEMA – A PATIENTS PERPETUAL JOURNEY FOR TREATMENT

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Aim: Chronic lymphoedema is widely seen in the health care arena but is rarely acknowledged and left untreated. Management of chronic lymphoedema/ wounds is a huge financial burden and estimated to cost 3 billion annually. This abstract portrayed as a case study illustrates the implications of lack of treatment and benefits of correct management.

Method: Patient referred to the Lymphoedema Service in 2009 having been diagnosed with chronic lymphoedema in 1991. During last 18 years has received input from vascular, dermatology and community nurses including ‘bandaging’ for copious leakage for 5 years. Circular knit compression garments were prescribed that were too small causing wounds around the knees. Big toe was so large that footwear was impossible for last 3 years, quality of life quoted as ‘poor’, had become housebound, unable to work, permanent offensive smell and required frequent hospital admissions for cellulitis. Bilateral lymphoedema bandaging using cohesive short stretch bandages was commenced, skin emollients and absorbent wound dressings applied together with exercises.

Results: Patient treated for 4 weeks on 14 occasions’, leakage stopped within 9 sessions, wounds healed, shape improved, hyperkeratosis, papillamatosis better. Lost 5,252mls off right leg and 6,040mls off left leg. Weight reduced by 16kg. Mobility and exercise tolerance increased.

Conclusion: Patients’ quality of life extensively improved,motivated in weight loss, joined a gym, returned to work and is wearing shoes. Attends clinic every 4 months for renewal of made-to-measure flat-knit garments. Benefits of getting the timing right are indicated.

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FOLLOW-UP OF ULCER TREATMENT DURING A TRAINING PROGRAM AND EXCHANGES IN CAMEROON

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Aim: Share the practical results of collaboration implemented in 2008 between a Nursing school and two treatment centers in Yaoundé (Cameroon) and a Swiss school regarding quicker healing and a decrease in pain during dressing repair.

Method: Two modules on the foundations of healing in a humid environment, the main principles of treatments and assessment of the state of the wound were based on the training. The essential elements of hospital hygiene and infection prevention were emphasized. Two professionals were able to apply the bases transmitted for the treatment and dressings in their treatment center and more particularly for leg ulcers.

Results: The referent professionals noted in three months:
– effective healing
– the satisfaction of patients that were able to resume their nutritive activities.

Conclusion: This program allowed:
– adequate and adapted use of simple and inexpensive products
– emphasis of the interest in the reduction in this type of wound
– emphasis that the decrease in pain and rapid healing results in a better compliance of the patient with their treatment.

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BI-LAYER CELL THERAPY: IS IT APPROPRIATE FOR HOME TREATMENT

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Introduction: Home treatment is often associated with “low-tech” solutions. In this work, we applied a cell culture treatment on a small collective of chronic rebel wounds, within the framework of home treatment.

This work described the methodology and pitfalls encountered in this particular context.

Materiel and Methods: The device of the study is a product of human cell treatment in two layers composed of one epidermic layer of keratinocytes and one dermic layer of collagen fibrils and living fibroblasts.

We applied this device in 10 instances in 7 patients in a context of home treatment of venous or mixed ulcers.

Results: We noted a rapid healing in four cases, in accordance with a favorable development described by the manufacturer.

Bi-layer cell therapy was reapplied in three instances. We noted the failure of the method in one situation.

In relation to standard practices, various adaptations of dressing type were necessary with this therapy.

Photographic illustrations are provided.

Conclusions: The device studied requires a change in the dressing practice supported by the recommendations of the manufacturer and the literature. We consider that the bi-layer cell therapy adapts well to this particular context of home treatment, supported by a network project.

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DEEP FACIAL CHEMICAL BURN – EMERGENCY, ASSESSMENT, MANAGEMENT AND RECONSTRUCTION

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Introduction: 39 years woman was admitted to emergency room with extensive face chemical burn as a result of assault. Plastic surgeon suggested strong acid effect as etiology of the burn because of coagulation necrosis signs. The affected zones where cleaned immediately with water shower for forty minutes period.

Aim: We are presenting a case report of deep facial chemical burn management and face reconstruction.

Methods: Laser Doppler scanning has been applied for burn depth assessment. The evaluation showed full thickness burns of nose, left cheek and left periorbicular area and partial thickness burns of other face parts. We applied early necrectomy and lid reconstruction for ektropion prevention and concomitant left eye drying. Consequent necrectomies and granulation tissue inducing dressings helped to prepare damaged area for further autodermoplasty. Partial thickness skin graft has been used for nose recovery.

Results: We have avoided bacterial infection of the burned area using everyday dressings and face care. Lid reconstruction prevented left eye damaging. After one month hospitalization all burned area has been covered with skin. Grafting saved nose cartilages and restored configuration of the patient face.

Conclusions: Strong chemical substances cause deep skin damages even if water debridement is applied immediately after accident. Early necrectomies reduce inflammation process and further scar formation. Deep facial chemical burn requires precise supervision and thorough management in special unit to get satisfactory results.

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USE OF NEW CONTACT LAYER DRESSING IN THE WOUND CARE

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Purpose: To provide clinical experience in the use of a new non-adherent soft silicon contact layer dressing for negative pressure wound therapy (NPWT) or on donor site of skin graft. This new contact layer dressing is a thin, soft and porous layer. Pore size is small aiming to protect of new granulation tissue to avoid bleeding. The purpose of this case series is to demonstrate the effectiveness of the new contact layer dressing in providing the necessary protection from adherence of the gauze and pain at dressing change.

Subject: One patient was chosen for the complicated wound which was a part of free latissimus dorsi (LD) muscle flap transferred for the reconstruction of lower extremity. The LD muscle was covered by skin graft. Negative pressure was needed to fix the skin graft and facilitate granulation tissue. Grafted skin was not torn off during dressing change. It was totally survived. Another patient was chosen the donor site wound. Skin harvesting was done using electric dermatome. The thickness of skin graft was 13-15/1000 inches. Gauze was applied as a secondary dressing over the contact layer dressing. Top dressing applied was polyurethane film dressing. The use of the new contact layer dressing reduced or eliminated pain and trauma at dressing change.

Conclusion: The new contact layer dressing is, in our opinion, the best choice of dressing for fixation of skin graft under NPWT and the donor site of skin graft.

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ASSESSMENT OF A DRESSING SOAKED WITH PHMB FOR THE TREATMENT OF INFECTED WOUNDS

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Aim: Verify the effectiveness of a new dressing soaked with PHMB, combining two properties:

1. Hydro balance (capacity of absorbing exudate and bringing humidity depending on the needs in an independent and simultaneous manner in each area of the wound).

2. Action of the PHMB (polyhexamethylene biguanide): a polymer, effective against a large variety of bacteria, viruses, fungi and yeasts. The PHMB deploys its antimicrobial potential inside the dressing on the surface of the wound.

Indications: infected wounds, weakly to moderately exudative, superficial and deep, in all phases of tissue reparation. Product available in dressing or packing form.

Methods: For the assessment, written and photographic data were collected at: the beginning of the treatment (D1), 3rd, 7th, 10th, 14th day and after 2 months, or at the end of the documentation.

Results: The assessment is of 8 patients with venous ulcers and 4 diabetics. The first results (2 weeks to 2 months, depending on the case) prove to be conclusive. The exudates, fibrin and signs of infection decreased. A good stimulation of granulation tissue was reported. Moreover, a decrease in pain was documented, especially at the beginning of the treatment.

The experiment showed the limitation of product use on excessively exudative wounds.

Discussion: The use of the product allowed a gain concerning the frequency of changings, costs and the speed of healing.

Conclusion: The presence of a reversible keratoplastic effect on the banks of certain wounds is currently being examined.

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SUCCESFUL TREATMENT WITH COLLAGEN IN STAGNATED CHRONIC WOUNDS

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Aim: The management of hard-to-heal or chronic wounds places a high economic burden to our budget. Next to this non-healing wounds represent a serious problem because degrading processes, like destruction of the extracellular matrix, prevent wound closure and also makes the wound vulnerable for infection. Standard treatments for such wounds, such as compression therapy, debridement and wound care for diabetic foot ulcers, can still leave a significant population with non-healing wounds.

The purpose of this study was to demonstrate the effective and practical use of collagen dressings in this these cases.

Methods: We reviewed the efficacy of the use of collagen in 20 patients suffering from chronic non healing wounds of different aetiology in clinical en out-patient setting.

Results: We have seen an quick response in all cases after the start of collagen. The collagen was easy to handle. The collagen absorbs exudates and forms a soft biodegradable gel, which rebalances the wound environment. The micro environment was successful rebalanced to promote autolytic debridement and forming granulation tissue.

Conclusion: In the daily practice the use of collagen is easy. The use of collagen not only improves clinical outcomes but has patients report an increase in comfort and less pain during treatment and at dressing changes. Collagen seems to be a convenient and effective product to improve stagnating wounds.

Case Study

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USE OF A HYDRO BALANCE DRESSING IN THE TREATMENT OF CHRONIC EXUDATIVE INFECTED WOUNDS

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Objective: Ulcerous, infected, exudative wounds have the tendency to become chronic in spite of local and general treatments.

The purpose of this study was to appreciate the use of local antalgic antimicrobial treatment.

Materiel and method: An 80 year old man, treated for arterial hypertension and arteritis of the lower limbs presented an eczematous ulcer, oozing and pruriginous in both legs.

A local and general treatment (antibiotherapy associated with the application of tulle containing silver sulfadiazine on wounds) revealed itself without a probative effect after one and half months of treatment.

We thus introduced in the treatment a Hydro balance dressing containing PHMB* (polyhexamethylene biguanide). It was applied on the ulcers and covered by a secondary dressing of thick tulle. The dressing was changed in a bi-weekly manner for three weeks, then once a week until completely healed.

Result: A local improvement was clearly visible after ten days of treatment. The dressings displayed a healing and antalgic effect, all while absorbing excess exudate and creating an optimal humid environment.

The healing was obtained after one and half months of treatment.

Conclusion: This observation seems to display the large effectiveness of the Hydro balance dressing containing PHMB* in the always difficult treatment of chronic exudative wounds in the elderly.

This product is a considerable asset since it does not adhere to the wound or the secondary dressing.

* Suprasorb X+PHMB, Lohmann & Rauscher GmbH

Case Study

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POLYHEXANIDE IN VENOUS ULCER WITH ASSOCIATED FUNGAL INFECTION

Claudia Moraes[1].

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Purpose: to report the experience using the Polyhexanide in venous ulcer with the positive culture to yeast.

Method: The case study took place in 2008/09, in São Paulo - Brazil, male sex patient, 80 years old, high blood pressure, venous insufficiency with mallelous veins calcification, presenting wide wound in MID. Treatment started presenting the ulcer on the external mallelous side. Coverage was chosen containing the associated silver + compressive therapy. Edema and aspects improved, however after 4 months treatment, it developed and caused the rupture of the epithelium area deforming the neo formed tissue and the irregularity on the border, increasing the exudates and pain. The exudates culture was performed resulted in positive for mixed flora with gram+ and gram – microorganism and Candida haemulonii. Topic Therapy (TT) was modified to Polyhexanide, maintaining the compressive therapy. The ethical and legal aspects of the research were complied with pursuant the Resolution 196/96 of National Health Council.

Results: After 08 changes of the dressing with Polyhexanide, the area showed an increase of the granulation tissue, reduction on exudates and remission of the fungal aspect perilesion. The tissue was healthy under the crust.

Conclusion: Polyhexanide introduction was efficient as it could fight the fungal infection and allowed the continuity of the compressive therapy, the recovery of the healing rhythm, contraction of borders, and increase of the neo formed tissue and improvement of the limb aspect.

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ELEPHANTIASIS WITH WOUNDS – A CHALLENGE FOR TREATMENT

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Abstract:
Anamnesis: Patient with Elephantiasis (weight: more than 420 lbs, breadth of the calf: 73 cm) with stagnant ulceration at the medial right lower leg since 6 months (massive stasis of tissue due to an already existing chronic venous insufficiency (CVI).

Status post thyroidectomy due to a thyroid carcinoma, existing hypertension.

Wound treatment over a period of more than 6 months with different ointments (including antibiotics) and Unna's paste dressing, which was not tolerated.

Aim: relief of pain and wound improvement or, in the case of good skin conditions, wound closure.

Method:
- wet-dry phases (wound cleansing with local anesthesia) and debridement with a dermatological curette.
- primary dressing: PHMB cellulose wound dressing*
- secondary dressing: foil**
- occasionally short-stretch compression with support padding
- in the beginning: stagnant wound situation with several dry ulcers (Ulcer 1: 10x5 cm, 2: 2x2 cm, 3: 2x1.5 cm; depth: 0.3 cm) at the medial lower leg. Great pain caused by debridement, which can only gradually be eased with the help of analgesics.

Results: Day 4: Reduction of the breadth of the calf by 3 cm, reduction of the ulcer approx. 0.5 cm. Easing of pain.
Day 14: Granulation islands within the wound, depth of the wound: 0.1 cm. Ulcer continuingly smaller and plainer. Omission of compression.
Five weeks later: Granulation tissue is clearly visible. The size of ulcer 1 is halved, epithelization of ulcer 2 + 3.
Eight weeks later: Wound size of ulcer 1 is reduced to 2.5 x 1.5 cm.

Summary:
- Reduction of the wound size or healing within 8 weeks
- Relief of pain and lesser itching after the changing of the dressing
- Higher quality of living
- No local infections

Effective and pain reducing wound treatment of a patient with difficult conditions is completed.

* Suprasorb X+PHMB, ** Suprasorb F, Lohmann & Rauscher

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EVALUATION OF THE TOPIC POLIHEXANIDE IN THE TREATMENT OF CHRONIC OSTEOMYELITIS IN PATIENT WITH DIABETIC NEUROPATHY – CASE REPORT

Claudia Moraes[1].

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Introduction: Osteomyelitis is an inflammation of bone, usually caused by infection, bacterial or fungal infection. About two-thirds of chronic ulcers of diabetic foot have some degree of involvement of bone infection4.

Aim: To evaluate the antiseptic and healing of topical polihexanide in postoperative procedure of Belfast in the lower limb.

Methods: Male patient, 81 years, hypertensive, diabetic neuropathy and anemic, with a lesion in the achilles tendon. Previously treated with dressings* until June 2009, when it was performed an X-ray and a resonance (MRI) that confirmed osteomyelitis. On July 4th, 2009 started treatment with polihexanide aqueous solution and gel on the wound bed. After 40 days was added polihexanide creamy moisturizing emulsion outside edges of the lesion and bandage changed daily in the household. The patient signed the consent form given to the Resolution 196/96 of the National Health

Results: The healing process from the use of topical polihexanide was considerable, due to the rapid aseptization installed in areas with lesions without affecting the integrity of the tissues exposed. After 188 days the skin around the wound presents moisturized and healed, as the photographic record.

* Calcium Alginate®, Aquacel Ag® and Saf-Gel®

Case Study

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TREATMENT OF ACUTE TRAUMATIC WOUNDS IN AN EMERGENCY DEPARTMENT: VALUE OF A READY-TO-USE SILVER-IMPREGNATED LIPIDO-COLLOID INTERFACE

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[2]*Laboratoires Urgo (Chenove, France)*

Aim: We see patients with acute wounds on a daily basis: accidents at work, such as crushing injuries or burns affecting the extremities, accidents occurring in day-to-day life, road traffic accidents, falls at home or gardening accidents. Wounds not requiring admission to hospital are treated and followed up on an out-patient basis. These traumatic wounds frequently occur in a context of significant bacterial contamination and are seen after a delay.

Methods: Their treatment requires exploration of the wound, with surgical paring or careful debridement of the wound if necessary. Suturing is performed where possible and the wound is then covered with a ready-to-use lipido-colloid interface impregnated with silver ions. We chose this interface since it can be used to dress awkward locations, such as joints and fingers; it is painless to remove since it does not adhere to the wound. The silver ions reduce the risk of local secondary infection, thereby promoting quick healing. Dressings are changed every day or every 2 days in the first week then twice weekly thereafter. When there are no longer any signs of infection – on average after 2 weeks – treatment is continued with a ready-to-use adhesive or non-adhesive neutral interface.

Results: We observed a good aesthetic and functional result in the patients that we saw again at a later stage.

Conclusions: A ready-to-use lipido-colloid interface impregnated with silver ions enables effective treatment of acute wounds at risk of infection.

Case Study

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USING AN INNOVATIVE SKIN CLOSURE DEVICE IN THE TREATMENT OF CUTS AND LACERATIONS

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[3]*Emergency Department of Hospital de Alta Resolución de Alcaudete (Jaén, Spain)*
[4]*BSN medical GmbH (Hamburg, Germany)*
[5]*BSN medical (Barcelona, Spain)*

Aim: Investigation of an innovative skin closure device to improve medical performance and efficiency in emergency departments.

Methods: Clinical investigations were undertaken between June 2007 and May 2008 in three different Spanish emergency departments. 104 patients with cuts and lacerations participated in the investigation. Wounds were treated with an innovative skin closure device containing sterile closure strips combined with an anchoring topical adhesive made of n-butyl-2-cyanoacrylate.

Several parameters such as time of closure, pain at application, patient satisfaction, cosmetic appearance, and complications were assessed by healthcare professionals and patients. In addition, photo documentations were done at the beginning and at the end of the treatment.

Results: In most cases the treatment time was less than three minutes. Patients rated the atraumatic skin closure as comfortable or very comfortable with no pain during application. Cosmetic appearance was assessed as good or very good by healthcare professionals. Complications like dehiscence and wound infections were identified in 1.9% of the cases. Ultimately patients and healthcare professionals were extremely satisfied with the performance of the skin closure device.

Conclusion: In this clinical investigation, the atraumatic closure device demonstrated that it is effective in the treatment of cuts and lacerations. Our results have demonstrated superior performance in terms of closure time, cosmetic appearance, and patient satisfaction combined with a low incidence of wound infections and dehiscence. In addition, this simple, quick and comfortable method provides high potential of cost reduction and time savings in emergency services.

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EXTRACELLULAR MATRIX PROTEIN: REBUILDING LIVES NOT JUST WOUNDS

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Introduction: A lady aged 76 underwent excision of sarcoma and radiotherapy to her thigh. Unfortunately, the wound broke down and failed to heal.

Initial review at eight months post operation the visible wound bed was sloughy, exudates purulent and copious, and the wound tracked 9.5 cm one direction and 1.5 cm the other direction. Total wound size was 42 cm^3. The dressings were changed at least daily and her quality of life was severely compromised. The consultant advised that if the wound failed to improve then she faced an above knee amputation.

Aim: After several interventions the decision was made to try a topical application which, once applied to the wound bed, provides a temporary extracellular matrix protein for cell attachment.

Method: Over a 10 week period the extracellular matrix protein was applied to the wound bed weekly. A delivery system using and intravenous catheter was devised to ensure the product reached the end point of the tract.

Results: After 10 weeks the exudate had reduced sufficiently to allow the dressings to be changed weekly. By month 8 the volume of the wound had reduced to 1.6 cm^3 i.e. 96% of wound healing.

Conclusion: At the point of submission treatment is ongoing but we are confident that total wound healing will be achieved and more importantly this lady will have her life back. The extracellular matrix has played a part in rebuilding their lives as well as the wound.

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EVALUATION OF THE EFFECTIVENESS OF A HYDROPOLIMERIC IONIC SILVER DRESSING ON THE MOST FREQUENT WOUND PATHOGENS. A CASE SERIES

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Aim: Wounds with infection or high bacterial burden tend to present a high level of exudates. Consequently it makes sense to treat both of these problems with one dressing able to control simultaneously both infection and exudates. Investigate the effectiveness of the dressing under study in terms of 1) controlling infection by pathogens common to wounds, including multi-resistant bacteria 2) exudates control and pressure relief.

Register any adverse effects

Methods: Patients of both sexes with infected wound or wounds with high bacterial burden.

Hydropolimeric foam dressing able to release ionic silver in a sustained manner, control exudates and relieve pressure from the wound and surrounding skin.

Bacteriological laboratory examination of wound swaps to identify bacteria.

The duration of the study is until complete wound healing.

Results:

Wound etiology	Pathogen	Wound healing
Arterial ulcer	Escherichia Coli	23 days
Venous leg ulcer	Staphylococcus Aureus	31 days
Diabetic foot	Multiresistant Pseudomona Aeruginosa	63 days
Venous leg ulcer	Proteus Mirabilis	68 days
Venous leg ulcer	Streptococcus Agalactiae	40 days
Venous leg ulcer	Enterococcus Faecalis	49 days
Venous leg ulcer	Klebsiella Oxitoca	62 days
Diabetic foot	Enterobacter Cloacae	28 days

Conclusions: The dressing is effective on all pathogens tested.
No signs of leakage or maceration.
Significant improvement of patient quality of life related to pain, malodor and comfort.
No occurrence of local or systemic adverse events.

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WITHDRAWN

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A NOVEL APPROACH TO THE MANAGEMENT OF EXOMPHALOS IN THE NEONATE

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Introduction: Exomphalos describes a herniation of the intra abdominal viscera through an open umbilicus ring at the base of the umbilical cord. These are typically divided into major or minor Exomphalos depending on the abdominal wall defect or based on the organs involved.

Aim: This case study aims to discuss the complex wound management of a major exomphalos.

Method: A honey impregnated tulle was introduced with a highly absorbent, low adherent pad dressing. This dressing regime was chosen based on an assessment of the wound conditions by the tissue viability team along with literature available on the use of advanced wound care products in pre-term infants. This preceded a period of local management, whereby various ad-hoc treatments where followed. Dressings where changed 48 hourly.

Results: Within the first 7 days of treatment there were positive changes to the wound. A 50% reduction in non-viable tissue to the exomphalos and a reduction in the inflammation of surrounding tissue. The wound edges appeared to be less prominent with less maceration due to better exudate management.

Discussion: The use of the honey tulle as a primary dressing to the major exomphalos, reduced the risk of infection due to its antimicrobial properties, while facilitating autolysis of non-viable tissue and suppressing inflammation. This allowed for effective wound bed preparation and stimulated tissue growth.

The use of a absorbent pad as the secondary dressing allowed for effective exudate management, maceration to the surrounding skin improved and the risk of excoriation was reduced.

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AN EFFECTIVE SOLUTION IN THE TREATMENT OF A CASES OF ARTERIAL DISEASE

Miriam Berenguer Perez[1], Cristina Burgos Diaz[1], Patricia Navarro Guerrero[1], Nuria Galcera Altes[1], Paco Cegri Lombardo[1].

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Aim: To demonstrate the effectiveness of the absorbent wound dressing pad with the absorbing and rinsing effect for debridement of the tissue not viable in chronic wounds and the assess their utility in daily practice in patients with arterial disease.

Methods: Descriptive study used 10 patients with isquemic leg ulcers over 1 years of development of grade III and with signs of critical colonization after receiving several treatment.After assessing the periulcer status of the skin (pain, exudates.) we decided to implement a new plan, of car using of the absorbent wound dressing pad.

Results: After application for 2 weeks with wound dressing pad that in combination with Ringer's solution produces a continous 'rinsing effect' at the wound bed for up to 24hours we observed a good evolution of skin periulceral, a reduction of exudate, the removal of necrotic tissue, the reducing the size of the ulcer, an atraumatic treatment and the supply of an adequate humidity to the wound frequently to absorb according to the necessities of the wound simultaneously.

Conclusion: After these first experience with 10 patients with arterial disease and the use of these new wound dressings we saw a reduction of the dressing change, an excellent exudate control with a lower risk of macerations and an effective pain control. The wound dressings were well tolerated.

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MULTIPLE CAVITY WOUNDS IN A PATIENT WITH COMPLEX MEDICAL PROBLEMS HEALED USING NEGATIVE PRESSURE WOUND THERAPY

Louise Savine[1].

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Aims: Negative Pressure Wound Therapy (NPWT) is used widely and successfully to treat both acute and chronic cavity wounds. This case illustrates the successful use of NPWT at multiple sites in a single, complex patient

Methods: The patient was a 70 year old man with multiple medical problems, including morbid obesity, type 2 diabetes, hypertension and osteoarthritis. He suffered from reduced mobility and a fixed flexion deformity of his left knee, leading to grade 4 pressure ulcers to his left trochanter and both heels. All three wounds required massive surgical debridement (3kg of tissue was removed form the trochanteric wound alone) and, post debridement, left wound cavities of up to 18 cm in depth. In both heel ulcers, calcaneal bone was exposed, with the femoral head visible in the trochanteric wound bed.

The mechanisms of NPWT with an antimicrobial Silver component were deemed the mnost appropriate treatment modality to achieve wound healing, therefore a combination of conventional and Silver NPWT dressings were applied.

Results: After 10 weeks continuous treatment, both heel wounds were reduced to approximately half their previous size, with healthy granulation tissue evident. There was no clinical or radiological evidence of osteomyelitis in the underlying bone. The trochanteric wound had reduced to 1 cm depth, with a wound area under 20% of its previous size.

Conclusions: The use of NPWT with sliver dressings results in significant wound healing in three life-threatening wounds in this complex patient.

Case Study

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USE OF A MULTILAYER COLLAGEN FLAP IN CHRONIC SKIN LESIONS: A POSTERIORI REVIEW

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Aim: The authors' purpose was to analysze the results of a series of grafts carried out with multilayer collagen flaps of pig derivation in the treatment of chronic skin lesions of varying etiology.

Methods: The study was carried out retrospectively by analyzing clinical and out-patient records in a series of 472 patients who underwent surgery at the "Difficult wounds" Outpatient Operating Unit. Clinical evaluation parameters were applied. The WBP Score, the evolution assessment and the complications were employed.

Results: The results were interesting in terms of complications and side-effects with a percentage of 0.43% while, if postoperative infections were included, the result stabilised around 3%. Conclusions. With a 60-day resolution percentage of 34.5% and an optimal 90% preparation of the wound bed at 30 days, the product can be considered effective.

Conclusions: The authors point out the limitations of the study in the absence of a control population but the high number of patients analysed still allows an assessment.

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DIABETIC FOOT AND POLYHEXANIDE: HOW FAR CAN WE GO?

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Aim: The diabetic foot remains one of the major challenges in wound care treatments, leading to impressive amputation rates. The case presented shows how the evolution of a diabetic foot amputation, seeming to move forward to several amputation and life threatening. In fact, all the interventions looked to fail, when the teams choose to used polyhexanide to the challenge of saving the rest of the limb.

Methods: This is a case study, a female diabetic patient, 80 years, DM type I since 30 yrs ago, amputated of a lower limb, followed always for the same wound care professionals, who made the photo´s evaluation, and delivered the wound care protocol established by the team. Initially, the dressing was changed 3/3 days period, using a cleansing of the wound with a solution of polyhexaninde and then applying a polyhexaninde gel + foam. All the wound measures we´re registered using the PUSH tool.

Results: The polyhexanide cleaned all the wound surface, including devitalized tissue, and help in the total healing of a diabetic foot ulcer resulting from a amputation left open for second healing. We can state that polyhexaninde clearly was the best first option for this treatment, and it seems to been a open option very viable for the treatment of diabetic foot ulcers hard-to-heal.

Conclusions: Further research is needed before standardizing polyhexanide as first option to diabetic foot ulcer hard-to-heal, but from the case we present, do belive polyhexanide has an important role to play.

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CARE OF TWO PATIENTS FOLLOWING EXTENSIVE DEBRIDEMENT OF DAMAGED TISSUE ARISING FROM INTRAVENOUS INJECTION OF HEROIN CONTAMINATED WITH ANTHRAX

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This paper presents care given to treat the wounds of two male patients who required emergency surgery to debride devitalised tissue after injecting heroin intravenously contaminated with anthrax. It is thought contaminated heroin or a contaminated cutting agent mixed with the drug may be responsible for the anthrax infections.

Cutaneous anthrax infection in humans presents as a boil-like skin lesion that eventually forms an ulcer. The ulcer often shows up as a large, painless necrotic lesion (beginning as an irritating and itchy skin lesion or blister that is dark and usually concentrated as a black dot, somewhat resembling bread mold) at the site of infection. Cutaneous infections generally form within the site of spore penetration 2-5 days after exposure.

These case studies will describe the surgery required and post operative wound care the patients received to remove the devitalised tissue, reduce the bioburden and promote healing of extensive wounds post surgical debridement.

Patient A had wound in left groin measuring 375 cm^3. Left leg grossly swollen.

Patient B had tissue damage to left groin and upper thigh measuring approximately 1500 cm^3. Left leg grossly swollen

At the time of submission the patients are 7 days post debridement and both have a topical negative pressure device in situ to promote wound healing through a number of mechanisms: oedema reduction, increased wound/dermal perfusion, increased granulation tissue stimulation, decreased bacterial loading and enhanced wound exudate removal.

Regular photographs and wound assessment will be undertaken and wound healing treatment detailed and presented.

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THE EFFECT OF HONEY WOUND GEL ON THE HEALING OF A CHRONIC WOUND

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Background: Honey was frequently used by Egyptians to obtain better wound healing. Honey regained some new interest during the last decade. One of the main reasons for this interest is the omnipresent resistance of bacteria towards antibiotics in wounds. Honey is suggested to be a possible alternative.

Aim: This case study is intended to prove the beneficial effect of honey wound gel in the healing process of chronic wounds of a patient, treated in the Chronic Wound Clinic, especially when other standard therapy has failed or when a wound seems to be atonic.

Method: The patient's underlying diseases are treated. The wound dressing is chosen considering the wound protocol of the Military Hospital. The choice of the primary and the secondary dressing is motivated.

The patient has been screened at intake and wound healing has been followed during therapy. The time needed for full autolitic debridement has been registered as well as the time to full healing. The wound has been measured and registration of the surface and depth has been done weekly. At the same time has a picture been taken.

Results: The honey wound gel has been efficient in wound debridement, avoids the secondary dressing of sticking into the wound, keeps the wound bed clean and not infected and leads to a significant reduction of wound surface in a limited period of time.

Conclusions: Honey wound gel seems to have beneficial effects in the healing of chronic wounds of patients treated in the chronic wound clinic.

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AN EVALUATION OF A FOAM DRESSING IMPREGNATED WITH 0.5% POLYHEXAMETHYLENE BIGUANIDE* (PHMB) IN THE MANAGEMENT OF COMPLEX WOUNDS

Frans Meuleneire[1].

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Aim: Pressure ulcers are expensive wounds to manage with the cost of the wound care products and the nursing time involved to undertake the dressing changes. The cost of expensive pressure relieving equipment also has to be considered, which is essential to prevent further damage and to offload the wound so that healing can take place.

The challenge for clinicians is therefore to select a dressing which can facilitate wound progression both by preventing infection and managing exudate effectively. In consideration of these requirements a 10 patient evaluation of a foam dressing containing 0.5% PHMB was undertaken on a range of pressure ulcers graded at stage 2 (EPUAP grading system).

Methods: Following a detailed patient, the evaluation dressing was applied to the pressure ulcer. Information was recorded on the frequency of dressing change, the wound progression and the patient's satisfaction with the product. Also exudate management and the infection status of the wound was also recorded. Patients were followed up for a period of 8 weeks or less if the wounds progressed.

Results: The wounds progressed during the period where the evaluation dressing was used. It was comfortable for the patients, and managed the wound exudate effectively. No signs of wound infection were observed during the evaluation.

Conclusion: Antimicrobial foam dressings are often used in the management of pressure ulcers to prevent wound complications. This small evaluation demonstrated that the evaluation dressing was effective both in managing exudate and in preventing infection.

*Kendall™AMD adhesive antimicrobial foam dressing

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CASE REPORT: NEGATIVE PRESSURE THERAPY OF WOUND DEHISCENCE AFTER NEUROSURGERY

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Aim: A case of a wound dehiscence after neurosurgery, treated by negative pressure therapy is presented.

Methods: Negative Pressure Therapy was performed by the guidelines of the hospital, which consists of a continuous suction at 175 mm Hg, the use of a polihexamide wound-rinsing solution* as wound irrigation solution, direct application of a sponge** and dressing change each 3 days.

Results: The patient is a 76-year-old female with a history of difficult wound healing from a previous spine operation. Now she had been treated for a spondylolisthesis of L4-L5 and L5-S1. By removing the stitches a wound dehiscence occurred. After one month of conservative treatment, an elaborate debridement was performed. The result was a large cavity infected by Staphylococcus Aureus and with exposure of osteosynthesis material. The fascia was closed and continuously negative pressure therapy (NPT) was applied, in order to create a controlled closed wound. NPT was sustained for 7,5 weeks. Intermittent partial closure of the subcutis was performed. This process resulted in a complete closure at the end of this 7,5 weeks. After removing the stitches, the site remained uninfected, closed and dry.

Conclusions: We conclude that the use of NPT in wound dehiscences, infected by Staphylococcus Aureus and with exposure of osteosynthesis material can lead to complete closure after an extensive debridement. We were able to close the wound progressively without any new dehiscences or other problems while NPT was in place together with daily oral antibiotic therapy.

* Prontosan®
** V.A.C.® GranuFoam®

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A CASE STUDY SERIES EVALUATION OF A SILICONE COATED FOAM DRESSING IN THE TREATMENT OF PATIENTS UNDERGOING ORTHOPAEDIC SURGERY

Greta De Meyst[1], Frans Meuleneire[2].

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[2]*AZ St Elisabeth Woundcare Centre (Zottegem, Belgium)*

Aims: To evaluate the effectiveness of a soft silicone dressing in reducing blister formation in patients that have undergone knee or hip replacement surgery

Methods: Nine patients that had undergone either knee or hip surgery had the wound site dressed (in theatre and at subsequent dressing changes) with a foam dressing*. Pain, dressing performance and the formation of blisters/lesions were assessed at each dressing change.

Results: The highest pain score recorded was 4 and this was transient in one patient shortly after the surgical procedure. The general trend for pain was in the region of 2-3 reducing (0-1) as the wound healed. The dressings were retained in place, absorbed blood and serous exudate from the wound site and did not cause damage to the surrounding skin. No blisters or lesions were identified.

Discussion: The formation of blisters or lesions in association with using aggressive adhesive dressings is problematic in surgical patients and generally not attended too. Unfortunately these lesions can lead to pain and reduced quality of life for the patient and a higher risk of infection because the skin barrier adjacent to the wound has been compromised. The results from this small study have been positive in that no blisters associated with the use of the dressing were identified.

Conclusion: Post-surgical wounds should be treated with dressings that do not cause further trauma (blisters) and pain. The use of the foam dressing* has been shown to address this problem.

* Mepilex Border

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FIRST EXPERIENCES WITH A NEW 'SOFT SILICONE' WOUND CONTACT LAYER

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Aim: We recognize more and more the need for f an atraumatic local wound treatment. Adhesive dressings often disturb the wound healing process. Further more, exudate may cause maceration and excoriation of the surrounding skin. A new silicone wound contact layer has been developed to protect the wound in the granulation and epithelialisation phases.

Method: We treated and evaluated 10 wounds, including burns, abrasions, lacerations, venous leg ulcers and a pressure ulcer. The wound contact layer could stay in place for several days and was covered with a foam secondary dressing. We observed the level of efficacy on every wound type.

Results: For each case we observed a vertical absorption towards the secondary dressing. We observed a complete atraumatic removal of the dressings. As a result, the patients did not need any more pain killers before dressing changes.

Conclusion: This new dressing shows some interesting protecting features on the frail wound and surrounding skin. The development of such silicone dressing provides a significant improvement in the treatment of wounds in their granulation and epithelialisation phase.

Finally we can conclude that this dressing is a good alternative for the treatment of frail wounds.

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CHRONIC OSTEOMIELITIS TRATMENT USING MICROSURGICAL GRACILIS MUSCULOCUTANEUS FLAP

Kaspars Snipe[1-3], Dzintars Ozols[1-2-3], Mihails Timofejevs[1-3], Marta Rudakovska[1-2-3], Olafs Libermanis[1-2], Janis Lapinš[1-2], Santa Daukste[1-3], Martins Malzubris[1], Eriks Ozols[1], Egita Deine[1].

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[3]*Rigas Eastern University hospital (Riga, Latvia)*

The aim of study is to demonstrate treatment approaches for lower leg osteomielytis and advantages for microvascular methods.

Methods: Patient had high energy trauma of right lower leg 25 years ago. It seems that patient had open tibia fracture Gustilo 3 B. Injury complicated with chronic osteomyelitis, n.peroneus avulsion and later with ankle contracture. Fracture was treated with Iliziarov external fixation. During these years persisting fibula fistula was observed and surgically treated.

Results: The Wound clinic's treatment was started according osteomyelitis protocol with radical debridement, proximal and distal osteotomy of fibula till ´paprica sign' bleeding was achieved. Totally 18 cm of fibula was removed. Defect was closed with gracilis – miocuteneus flap from right leg. Muscular part 6x12 cm and fasciocutaneus part 8x15 cm. Uncial anatomy was observed – fasciocutaneus perforator was discovered arriving from nutrition branch of gracilis approximately 15mm from entering in muscle. Fasciocutaneus flap was taken separately from gracilis muscle based on nutrition perforator. Microvascular anastomosis were done using end to side technique to a. tibialis anterior, two concomitant veins were sutured. Suspend suturing was used to reduce risk of edema. Sutures were tied on day 7. Patient received antibacterial treatment according protocol for 4 weeks, two weeks i.v and 2 weeks p.o. using second and third generation of cephalosporins.

Disscusion: Chronic lower leg osteomielytis is common problem in modern world, what requires surgical treatment – radical debridement, defect closure, antibacterial therapy. Microsurgical flap can be used for defect closure.

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AMELOGENIN THERAPY: HOLISTIC APPROACH TO WOUND CARE

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Aim: To report on a case study involving a patient with a long-standing, difficult-to-heal venous leg ulcer, complicated by gross lymphoedema, hypertension and poor mobility.

Methods: Using an aseptic technique over a seven-week period, amelogenin* was applied to the wound bed weekly. Wound assessment was carried out using the Wound Care Continuum. A foam dressing and tubular elasticated bandage completed the dressing regime.

Results: The wound demonstrated an overall reduction in both circumference and depth. Necrotic tissue and associated malodour were absent by the second week of treatment. There was a gradual reduction in slough and exudate production by week three, resulting in a granulating wound bed. The excoriated macerated peri-ulcer region was fully healed by week three. The wound produced negative swab results from week one until completion of therapy with marked reduction in both exudate viscosity and volume. The patient's pain score at the beginning of the therapy was a constant 6/10 despite the use of analgesia; this reduced at week two to 2/10 and 1/10 for the subsequent weeks, leading to a decrease in prescribed analgesia. The treatment also improved the patient's quality of life and her ability to mobilise and function more independently.

Conclusions: Amelogenin therapy resulted in considerable improvements in the physical, psychological and social facets of the patient's wound healing status.

* Xelma® (Molnlycke Health Care, Gothenburg, Sweden)

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THE USE OF CALCIUM ALGINATE SILVER MATRIX DRESSINGS IN PATIENTS LIVING WITH THE AIDS IN SOUTH AFRICA

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Aim: To investigate the effect of using topical Silver dressings on immuno-compromised patients.

Method: Observations were made on 14 patients (n=14) all with infected wounds suffering from AIDS the average age was 37 years. They were split into Group 1 (6 male and one female) and Group 2 (5 males and 2 females). The groups had various types of wounds comprising of (4 pressure sores, 6 acute surgical, 6 gunshot wounds and 2 burns) Group 1 had their treatment regime as per hospital protocol where infected wounds are treated with betadine, foam or surgical pad and a course of antibiotics. Group 2 was treated with Calcium Alginate Silver dressing for localized infections.

Results: The bacterial load on the wound bed was significantly reduced in Group 2 within a period of 7 days as compared to Group1 took an average of 14 days to reduced amount to bacteria. Pain was less prevalent in Group 2 patient on the Calcium Silver matrix dressings, while a pain and bleeding was observed in group 1 patients. A high level of exudates was observed in Group 1 where on daily dressing changes continued for a more than 7 days while Group 2 patients level of exudates was significant reduced by week 2.

Conclusions: Calcium alginate silver matrix is more effective in the reduction of bacteria on the wound bed in immune-compromised patients.

Reference: Askina Calgitrol Ag

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SQUAMOUS CELL CARCINOMA MASQUERADING AS A CHRONIC WOUND

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Aim: In a sub-group of patients, squamous cell carcinoma (SCC) can present as a non-healing wound.

Methods and Results: A 76 year old male with dyskeratosis congenita (DKC), who had fought in Africa during World War II, had a history of multiple cutaneous SCC; presented with a painful shallow ulcer on the ventral surface of his foot. In keeping with the diagnosis of DKC the patient had myelodysplasia, nail dystrophy and reticulate hyperpigmentation of the hands. The skin surrounding the wound appeared normal, the wound margin showed no evidence of re-epithelialisation and the wound bed appeared healthy. The ankle brachial pressure index was normal. An initial wound edge biopsy demonstrated healthy granulation tissue. Yet despite optimal wound care, the ulcer failed to heal and increased in size. On a further two occasions biopsies were negative and only when the wound edge was biopsied on the fourth occasion, 4 years after the onset of the wound, did the histology demonstrate the presence of a poorly differentiated invasive SCC.

Conclusion: DKC is one of a number of genodermatoses that predispose to SCC, which include: xeroderma pigmentosa, recessive dystrophic epidermolysis bullosa, occulocutaneous albinism and epidermodysplasia verruciformis. Similarly, patients who are on immunosuppressant, been exposed to carcinogens (arsenic), ionising radiation or excessive ultraviolet light, are also at increased risk of SCC. Such patients may present with SCC that masquerade as non-healing wounds. This case illustrates the potential need for multiple biopsies that maybe necessary to make the diagnosis of SCC.

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THREE CASE STUDIES SELECTED FROM A PILOT STUDY USING A NOVEL INTERMITTENT PNEUMATIC COMPRESSION (IPC) DEVICE IN THE RESOLUTION AND MANAGEMENT OF NON-HEALING LOWER LIMB ULCERS

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Aim: To examine the outcomes of 3 case studies on the effects of IPC on wound healing over an 8 week period who were part of a 20 patient pilot study

Method: Three patients were selected from an ongoing pilot study of 20 patients, 10 patients with active venous ulceration and 10 patients with mixed arterial venous ulceration. In addition to reduction in wound size the acceptability of IPC as an adjunctive treatment in terms of practicality, ease of use and comfort were reported upon. Patients were also asked to report the effect IPC had on their experiences of pain.

Results: The 3 patients had used the IPC in conjunction with a standard multi-layer bandage system. All had shown an improved healing over the 8 week period as well as a reduction in overall pain. Two hours appeared to be the acceptable wear time for the patients. The 3 patients reported the IPC easy to apply and remove and were satisfied with the treatment.

Discussion: From the 3 case studies it has been demonstrated that IPC is a safe and effective in the management of patients with leg ulcers as an adjunctive therapy when worn for 2 hours daily.

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THE COST EFFECTIVENESS OF USING CALCIUM ALGINATE SILVER MATRIX IN THE TREATMENT OF WOUNDS

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Aim: To investigate the cost effectiveness of using a silver dressing in the treatment of wounds.

Method: 20 patients (12M:8F) median age; 55 with locally infected diabetic foot ulcers (4), acute wounds (4) venous leg ulcers (4) pressure sores (8). Patients had clinical signs of infection the bacterial density was monitored. Group1 patients were treated with alginate dressing with antibiotics, Group2 treated with calcium alginate silver matrix*. Dressing costs and manhours were compared.

Results: Group1 more expensive than Group2 considering nursing time and dressing changes. Bacterial load significantly reduced within 7days, Group 2 and infrequent dressing changes. There was insignificant different in healing times. Staphylococcus aureus strains reduced in group2 within 7days.

Conclusions: It's more cost effective to use calcium alginate silver matrix dressing* for the treatment of infected wounds.

*Askina Calgitrol Ag BBraun

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PAINFUL MUTILATING ULCERATION OF FEET IN SPASTIC DIPLEGIA RESULTING FROM ACROANGIODERMATITIS

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Aim: Acroangiodermatitis is a painful mutilating disease of feet in spastic diplegia

Results: Three young males with spastic diplegia, ages 29 to 35 years, due to cerebral plasy or spinal cord injury are presented. All had developed a violaceous plaque over the dorsolateral two thirds of both feet, with subsequent ulceration many years later. Of the two patients with intact sensation, the presence of the violaceous plaque and subsequent ulceration necessitated opiate analgesia. Ulceration preferentially affected the small toes, and despite optimal local wound care repeated amputation was necessary to manage deep seated infection in one patient. Dupplex scans demonstrated normal arterial flow. Histology of the plaque, in all three cases, confirmed the diagnosis of acroangiodermatitis.

Conclusions: Acroangiodermatitis is characterised by a benign pseudo-karposiform capillary endothelial proliferation in response to sustained chronic venous insufficiency. As classically described in association with chronic venous insufficiency due to valvular or thrombotic complications, albeit rare, acroangiodermatitis has a male preponderance. We postulate based on our cases that the absence of venous muscle pump function in males with spastic diplegia predisposes to acroangiodermatitis, as well as subsequent painful mutilating ulceration of the feet.

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MANAGEMENT MALIGNANT FUNGATING WOUND SLOUGHING USING A HONEY DRESSING

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Aim: To evaluation effective local treatment using honey dressing reduces wound bed slough in buccal cancer with neck malignant fungating wound (MFW)

Method: We present a 50-year-old man with a 15 x 8 x 3 cm (width x length x depth), crater-like, malignant fungating wound on his neck. Ninety five per cent of the wound bed comprised thick yellow slough and 5% granulation tissue. There was also heavy malodour, pain and extensive exudates.

Methods: Tissue management-The wound bed was cleansed with 0.9% warm saline before dressing application. High-pressure irrigation was used on the thick slough tissue, and low-pressure irrigation on the granulation tissue of the visible areas of the wound bed. Gauze was directly applied to absorb the saline on the periwound. Infection and inflammation control - alginate honey dressing as the primary dressing, applied directly to the wound surface, and gauze or pad as a secondary dressing. Moisture balance –An absorbent, non adherent calcium alginate was therefore applied as a primary dressing that to absorb the exudates and maintain a reasonable moisture level on the wound surface during the initial care period. Protect wound edges- we washed the unclean surrounding skin, applied cavilon emollient cream, followed by a non Sting barrier film.

Results: Over two months, reduce the wound slough, exudates, malodour, improve wound bed granular tissue and the patient's physical well-being improved greatly.

Conclusion: Local therapy MFW using honey dressing produced surprisingly good results.

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EFFECTIVENESS OF POLYHEXAMETHYLENE BIGUANIDE HYDROCLORIDE (PHMB) FOAM DRESSING IN A CASE OF POST-TRAUMATIC SALIVARY PAROTID FISTULA

Giuseppe Maria Antonio Algieri[1], **Corrado Maria Durante**[1], Maurizio Crispo[1], Antonio Basile[1], Giuseppe Marchi[1], Mauro De Luca[1], Emanuele Gobbi[1].

[1]*Rome Military Hospital, Celio (Rome, Italy)*

Aim: Testing the effectiveness in terms of recovering time and functional results of poyhexamethylene biguanide hydrocloride (PHMB) foam dressing when treating for head and neck injury complicated by salivary parotid fistula due to gunshot.

Methods: A patient hospitalized in ENT department, 96 hours since injured, showing entry hole in right retro-mandibular region and exit hole in left parotid region, along with evident spontaneous saliva leaks. During 9 days hospitalization the patient was subjected to clinical, endoscopic and radiological findings (i.e. CT and MRI scans). According to the Wound Care Unit, a plan of local treatment was established with dressing performed every 48 h, employing PHMB foam dressing. The patient, discharged on day 9th,, instructed in pursuing out-patient domiciliary medications, was subjected to a 2 months follow up period (including MRI controls).

Results: Following 5 dressings, on day 9th (day 13th referring to traumatic event), it was highlighted an advanced soft tissues healing along with complete salivary fistula closure.

Conclusions: Such specific case was peculiar to demonstrate the importance of multidisciplinary synergies (ENT and Wound Care Unit) and the effectiveness of PHMB foam dressing in case of salivary fistula to drive the healing process, due to bacterial burden control and moisture control, halving the expected recovering time free of complications.

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CLINICAL EXPERIENCES WITH A SKIN STAPLER

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[2]*BSN medical GmbH (Hamburg, Germany)*

Aim: A clinical investigation with ten patients was performed using skin staplers as wound closure method.

Methods: Investigations were performed at Elbe Hospital Stade, Germany. Ten patients with incisions after surgical procedures were treated with skin staplers. The stapler is a sterile, disposable single-use device suitable for topical wound closure and contains 35 wide staples made of stainless steel.

Wearing comfort was assessed by patients. Healthcare professionals were asked to report cosmetic appearance, time, complexity and safety of stapling procedure as well as complications.

In addition, photo documentations were done at the beginning and at the end of treatment.

Results: Patients assessed the wearing comfort as pleasant or very pleasant. Cosmetic appearance was evaluated as good or very good by the healthcare professionals. Furthermore, this wound closure method was assessed to be quick, safe and easy. There was no incidence of complications. In addition, staple closure was less expensive in terms of equipment and total costs based on equipment and physician time.

Conclusion: Skin stapling is easier and quicker than many other skin closure methods at a lower overall cost in most circumstances. Our clinical investigation showed that wound closure with skin staplers is an efficient and cost-effective alternative method to other wound closure techniques for incisions after surgical procedures with excellent cosmetic results.

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SYMMETRICAL PERIPHERAL DIGITAL GANGRENE FOLLOWING SEVERE MALARIA

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Aim: We describe and discuss the management of Symmetrical peripheral digital gangrene (SPDG).

Methods / Results: Three days after returning from Nigeria, a 44 year old African midwife presented with malaria. BINAX test was positive and subsequent blood film revealed 24% parasitaemia with schizonts. In keeping with the diagnosis of severe malaria, investigations also revealed; acute haemolysis, acute hepatorenal failure and disseminated intravascular coagulopathy. Initial treatment consisted of exchange blood transfusion and intravenous artesunate, which led to clearance of malarial parasites. Due to persistent hypotension she received vasopressors for 9 days, together with administration of heparin and fresh frozen plasma, but developed peripheral cyanosis, with subsequent evolution to SPDG. Despite making an otherwise full recovery, her occupational rehabilitation poses a significant challenge

Conclusions: SPDG is an unusual complication of a number of different life-threatening thrombotic states, often as sequelae of purpura fulminans, such as disseminated intravascular coagulopathy (DIC) secondary to Malaria.

For those that survive the acute illness, SPGD is a major debilitating complication. As with “dry gangrene” necrotic digits are often left to auto-amputation in order to maximise recovery of viable tissue, however this period of time varies substantially. To assess the patient’s needs occupational therapist questionnaire and interview are essential. In addition exercise can stimulate collateral blood flow, increasing tissue preservation and maintaining joint function. As with SPDG the successful rehabilitation of limbs following trauma, burns or rheumatoid arthritis; is very much dependent upon maintenance of small joint function and grip strength.

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MANAGEMENT OF DIFFICULT FISTULAE IN PATIENTS WITH ABDOMINAL WOUNDS

Silindile Mavinini[1].

[1]*Inkosi Albert Luthuli (Durban, South Africa)*

Aim: To evaluate the use of sterile stoma appliances in the management of fistulae

Method: 8 patients with highly exudating fistulae were treated with the wound drainage bags in the evaluation of the appliance. Group1 (n=4) patients were put on sterile wound drainage bags with the Group2 (n=4)were put on TPN. The time and comfort to the patient was used as a measure of efficiency. 2 out of 4 patients on TPN ended up with a bigger fistula.

Results: There was no significant difference in the use of TPN and the wound drainage bags. The cost of using TPN was significantly higher. Drainage bags had less risks of creating bigger fistulae as there was no pressure in the extraction of the exudates. 1

Conclusions / Discussions: The use of wound drainage bag is much safer for practitioners no experience in Fistulae management.

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USING WOUND BED PREPARATION TO HEAL A NECK MALIGNANT FUNGATING WOUND: A SINGLE CASE STUDY

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Aim: This case study is to highlight the role of palliative care and the importance of a multidisciplinary team approach for the management tonsil cancer patient with neck malignant fungating wound (MFW).

Method: We present a 67-year-old man with a 13 × 12 (width × length), proliferating and ulcerating lesions MFW on his neck. Eighty per cent of the wound bed comprised red granulation tissue and 20% thick yellow slough.There was also heavy malodour, slight bleeding due to trauma from an conventions dressing, pain and extensive exudates.

Method: Initial treatment compromised radiotherapy. Tissue management-The wound bed was cleansed with 0.9% warm saline before dressing application. Infection and inflammation control - a hyrofiber with silver dressing* as the primary dressing and gauze or pad as a secondary dressing. Moisture balance – a hydrofibre dressing with silver* was therefore applied as a primary dressing that to absorb the exudate and maintain a reasonable moisture level on the wound surface during the initial care period. Protect wound edges- we washed the unclean surrounding skin, applied non alcohol cream.

Result: Over a course of three months, the wound healed completely and the patient's physical well-being improved greatly.

Conclusion: We recommend that treatment of patients with malignant fungating wounds can benefit from palliative multidisciplinary team approach and applying the wound bed preparation principle**.

*Aquacel Ag, ConvaTec, **TIME

P 308

THE ANKLE-ARM INDEX AND THE ARTERIAL ATHEROSCLEROTIC PATRHOLOGY

Sierra Verónica[1], Fort Ingrid[1], Cuixart Lluis[1], Campmajo M.Carme[1].

[1]*EAP Dreta de l'Eixample (Barcelona, Spain)*

Aim: Validating the relationship between pathological AAI and atherosclerotic pathology in diabetic patients. Comparing the results in two separate groups: 65 years old versus <65 years old.

Methods: Descriptive transversal study on diabetic patients in a urban public health management area.

Sample: 100 diabetic patients with measured AAI.

Variables: age, gender, AAI, smoking, and atherosclerotic complications (ischemic myocardiomyopathy, cerebrovascular accident).

Results:
- Patients 65 years old (63 patients, 60% male)
- AAI values: 76% normal; 19% pathological; 4.7% inconclusive.
- Active smokers: 5.2%
- Atherosclerotic complications: 19%
- Patients <65 years old (37 patients, 64% male)
- AAI values: 70% normal; 18% pathological; 10.8% inconclusive.
- Active smokers: 20%
- Atherosclerotic complications: 18%

Conclusions: Although the results on the small analysed sample have small statistical significance, the relationship between pathological AAI and atherosclerotic complications is visible on both age groups.

We're considering increasing the sample size to continue the study and obtain more statistically significant results in the future.

Case Study

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TREATMENT OF COMPLEX PYODERMA GANGRENOSUM (PG) NEEDS A MULTIDISCIPLINARY STRATEGY

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Aim: To show the importance of a multidisciplinary strategy for a successful treatment of a complex case of PG.

Method: A 58-year-old woman, diagnosed with biopsy verified PG was admitted to the Wound Healing Center at Odense University Hospital, with rapidly progression of painful circular necrotic lesions and bilateral exposure of achilles and peroneus tendons. Wounds were very painful and both knee and ankle joints were stiff, so the patient was not able to walk without support from the nurses.

Results: The patient was treated by dermatologists with systemic corticosteroids and azathioprin stabilizing PG.

An epidural catheter was implanted so that she could get analgesia, which made possible the debridement of the ulcers and the treatment with NTP and compression.

Microbiologist started treatment with ciprofloxacin because of wounds colonization with pseudomonas. Intensive physiotherapy was started. The patient got special footwear from our podiatrist.

After 2 weeks the surgeons were able to apply bilateral skin graft and brissement forcé on knee and ankle joints.

She was discharged 19 days after surgery with very successfully skin graft results. After the discharge, the patient continued physiotherapy.

She has subsequently been followed in the outpatient clinic, her medical treatment has been significantly reduced and she has been pain free and without recurrence in one year.

Conclusion: The best treatment of complex PG is – based on our experience – a multidisciplinary task, where the collaboration between surgeons, dermatologists, physiotherapists, podiatrist and microbiologist is necessary to have successful results with a short hospitalization.

Case Study

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MANAGEMENT OF A DEHISCED ABDOMINAL WOUND WITH TOPICAL NEGATIVE PRESSURE* THERAPY: A CASE STUDY

Wu Li-Yueh[1].

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Aim: A 56years old male had received appendectomy in 1998, operation had been performed for many times due to ileus. In 2005, who had undergone laparoentreostomy and segmental resection of two loops of small bowel anastomosis. Surgical intervention of resection of two loops of small intestinal anastomosis was performed on Sep. 27th 2006 in order to repair the fistula, the surgical wound was unable to be closed, and thus we used normal saline bag to cover and protect the exposed small intestine. Debridement of the wounds at abdominal wall was performed on Oct. 4th 2006 with the use of Topical Negative Pressure* therapy, laparotomy wound and cavity measuring 14 cm x 12 cm x 1.2 cm. On Nov. 10th 2006, Topical Negative Pressure* therapy was caesed due to the growth of granulation tissue, then we had changed the wound dressing into hydrofiber dressing twice daily.

Methods: The Topical Negative Pressure* therapy was applied to the wound at 125mmHg of intermittent therapy and changed dressing at 2to3 day intervals. A barrier film was applied to the perineal skin when changed dressing.

Results: There weeks later,the wound had cometely granulated and was so small and the patient was discharged with hydrofiber dressing. Nov. 10th 2005 discharged. Nov. 28th 2006 wound measuring 10 cm x 3 cm.

Conclusion: Topical Negative Pressure* therapy has been extremely beneficial in improving the rate of healing and quality of life for patient.

*VAC

P 311

CASE STUDY: REMOVAL OF BIOFILM IN INFECTED VENOUS LEG ULCER (VLU) USING POLYHEXANIDE AND BETAINE WOUND IRRIGATION AND GEL

Elizabeth Ovens[1].

[1]*Hillingdon Community Health Hillingdon NHS (Hayes, Middx, United Kingdom)*

Aim: A case study was undertaken to evaluate the effectiveness of using a Polyhexanide and Betaine wound irrigation and gel* for the management of a chronically infected Venous Leg Ulcer (VLU) with presence of Biofilm.

Methods: An 84 year old lady with a history of Chronic Lymphoid Leukaemia, presenting with a six month history of chronic infected VLU was included. The wound measured 38 sq cms with 100% slough. She was unable to tolerate high compression therapy due to a high pain score of 8 out of 10. Due to the probable presence of biofilm in the wound, several courses of antibiotics had proved unsuccessful and the wound swab demonstrated no bacterial growth. Photos and wound dimensions were recorded prior and during the treatment.

Results: At 3 days, the wound bed appeared cleaner with less peri -ulcer inflammation, and at wo weeks the wound size reduced to 34 cms , pain score reduced to 3 out of 10 and four - layer bandaging was commenced and tolerated which then allowed the wound to progress and heal.

Conclusion: Biofilms in a wound can impair healing and may contribute to a chronic inflammatory state. The nature of a biofilm, being encased in a matrix of extracellular polymetric substances, can prevent antibiotics and usual cleansing liquids such as normal saline being effective. This case study demonstrates that using a Polyhexanide and Betaine wound irrigation and gel* can rapidly aid removal of the biofilm and thus promote healing of the wound.

* Prontosan Irrigation Solution and Gel

P 312

ESTIM IN TREATMENT OF PAIN IN LEG ULCERS. A CASE SERIES OBSERVATION

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[1]*st luca's clinic UO difficult Wound (Pecetto Torinese, Italy)*

Aim: evaluate of clinical result in the treatment of pain in leg ulcer, different etiology, with electrical stimulation with a balanced asymmetric pattern

Methods: E.stim is normally employed as adjuvant treatment in painful ulcers in our center. A case series observation on 100 patients was analyzed a posteriori on the clinical record. Pain was evaluated with the VAS scale, at time 0, 10 and at 1 month (+ 3 days). Inclusion criteria was pts with pain that affected the normal QoL and activity, (minimum VAS 4). At admission the Pts received a treatment twice a day for ½ our for a period of 10 days (or 20 session). Contraindication was defined as normal for Estim

Results: only 2 Pts don't complete the treatment for an increase of the pain (2%). A reduction of pain lower than 2 point on the VAS was considered a failure in the treatment (13%). Positive result occurred in 85%. The evaluation was performed on 98 cases, the median of VAS at admission was 7,42; at time 10 (end of treatment was 3,11; at 1 month was 3,48.

Discussion/Conclusion: We considered the result as a good performance of the device. On this bases a double blind study was defined and it is started in 2010.

Case Study

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WITHDRAWN

Case Study

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EFFICACY OF THE TREATMENT OF VENOUS LEG ULCERS WITH FETAL FIBROBLASTS

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[2]*State Research Institute of Highly Pure Biopreparations (St-Petersburg, Russian Federation)*

Investigation of efficacy of the human fetal fibroblast therapy in the treatment of venous leg ulcers.

The treatment group consisted of 42 patients with 76 leg ulcers. In the control group, there were 40 patients with 75 leg ulcers. By the beginning of the treatment the period of existing of the post-thrombotic ulcers averaged 7.6 year in the treatment group and 7.1 year in the control group. The mean existing period of ulcers due to primary varicose veins was 3.3 year in the treatment group and 3.2 year in the control one. During first (necrotic) and second (granulation) stages of ulcers healing their treatment was equal and included using of water-soluble antimicrobial ointments. During third stage (epithelialization) in the treatment group culture of fetal fibroblasts was employed, and in the control group hydrocolloid wound dressings were used.

In the control group the healing rate was 84.6% for varicose ulcers and 77.6% for post-thrombotic ones. The mean healing term was 3.5 and 3.8 months correspondingly. Necessary frequency of wound dressing's replacement during epithelialization stage averaged 1 in 2.3 days. In the treatment group the healing rate was 100% for varicose ulcers and 98% for post-thrombotic ulcers. Healing period averaged 1.7 weeks for varicose ulcers and 3.9 weeks for post-thrombotic ones. Necessary frequency of wound dressing's replacement during epithelialization stage in this group averaged 1 in 7.2 days.

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LIGHTNING INJURY: MULTIPLE CASE REPORT

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Aim: to evaluate all possible to obtain data about casualties of lightning injury in Lithuania in 1999-2009 year.

Methods: Data were collected in Kaunas University Hospital (KMUH - main hospital for wound and burns care), Lithuanian Health Information Center, Statistical Department by Lithuanian Government, The information of National Patient Chest Informative System “Sveidra“, regional Lithuanian hospitals directly, The Institute of Forensic Medicine of Mykolas Romeris University Kaunas, Lithuanian daily press. By permission of Center of Bioethics all lightning strike survivors were questioned, their clinical course, treatment and long-term sequelae analysed.

Results: 14 clinical cases in ambulatory link and 14 cases in hospital link were found in KMUH: Only 13 of 28 examined cases were the casualties of lightning injury despite all carried the same code. All true cases suffered from lightning strike in the year 2007 at the same locally. 6 cases were detected at regional hospital and 1 by help of other survivors. The Institute of Forensic Medicine of Mykolas Romeris University Kaunas was very useful detecting wrongly coded patients.

Lithuanian Health Information Center, Statistical Department by Lithuanian Government and The information of National Patient Chest Informative System “Sveidra“ had ‘no or too much’ cases detected and were in no help finding more lightning injury cases.

The findings are displayed in below included table.*

Conclusions: Nearly all lighting injury survivors had long-term sequelae. Causative coding of trauma in Lithuania is essential for further investigations. Information on lightning injury is poor at public and specialist level both.

* Not available at time of print

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HYDROXUREA INDUCED ULCERATION AFTER BREAST SURGERY

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[2]*Rijnland Hospital (Leiderdorp, Netherlands)*

Aim: To describe a patient with a hydroxurea induced ulceration after breast surgery. There was complete healing after discontinuation of the hydroxyurea therapy.

Methods: Single casereport, A review of the literature about hydroxurea induced skin-ulceration.

Results: Completed healing after discontinuation of the hydroxyurea therapy.

Conclusion: A patient with hydroxyurea induced breast ulceration recovered completely after discontinuation of the hydroxyurea therapy.

Case Study

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POLYMERIC MEMBRANE DRESSINGS: REDUCTION OF EDEMA AND PAIN ON SURGICAL WOUNDS

Peter Schmid[1].

[1]*Klinik Hirslanden/ General and Vascular Surgery (Aarau, Switzerland)*

Background: A 77 ys old female with an arthrotic right knee was placed on heparin and oral anticoagulation for suspected deep venous thrombosis. The medial compartments of her right lower leg had to be evacuated due to massive hemorrhage from impression fractures of her medial femoral condyle and the medial tibial plateau into a ruptured Baker's cyst. Polymeric membrane dressings were applied. On postop day 15 she underwent total knee replacement and postoperatively again polymeric membrane dressings were applied. The wounds both healed uneventfully.

Aim: To demonstrate how we use polymeric membrane dressings to prevent pain and edema whilst facilitating healing when used on post-operative wounds.

Methods: Polymeric membrane dressing applied to the surgical site immediately after evacuation of hematoma and again after total knee replacement surgery.

A conventional surgical wound pad was used 9 days after total knee surgery but

within 24 hours we switched back to polymeric membrane dressings due to increased swelling and pain.

Results: Reduction in edema and pain due to polymeric membrane dressings after decompression of a compartment syndrome allowed for total knee replacement surgery after 16 days an the patient recovered within less than a month from compartment syndrome and total knee replacement.

Discussion: Since starting with polymeric membrane dressings in my practice 4 years ago I have experienced faster healing, less swelling, reduced pain levels and reduced infection rates in my patients. This experience suggests that further prospective trials should be done.

Case Study

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THE COMBINATION OF LAVAGE TECHNIQUE WITH TOPICAL NEGATIVE PRESSURE THERAPY FOR THE CLOSURE OF DEEP WOUNDS

Gabor Szabad[1], Judit Vasas[1], Lajos Kemeny[1].

[1]*Medical University of Szeged, Department of Dermatology and Allergology (Szeged, Hungary)*

Effective treatment of deep, infected, hard to heal wounds is still a great challenge for wound care specialists world wide. We have developed a simple and safe method to treat these wounds from the combination of lavage technique and topical negative pressure therapy.

After exact volume measurement of the wound cavity a special foam dressing was placed into the wound bed containing a lavage tube. Wound bed was closed with a topical drape foil, and negative pressure was administered. In accordance with a strict regime, negative pressure was intermittently stopped for lavage to take place with the use of antiseptic solutions. Treatment was continued for 72 hours before changing the dressing and lavage tube in the wound.

Patients with deep pressure ulcers, necrotizing fasciitis and diabetic foot ulcers were successfully treated with our technique. Wound bed infection was rapidly solved, granulation rate was outstanding. In our opinion, the combination of these two techniques resulted in a simple, effective method, suitable for the treatment of deep, infected, hard to heal wounds.

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ULCUS CRURIS OF UNKNOWN CAUSE

Miljana Pintar[1], **Dubravko Huljev**[1], Suzanne Leaphart[2].

[1]*Clinical Hospital «Sveti Duh» (Zagreb, Croatia)*
[2]*Advanced Wound Recovery PC (Boston, United States)*

This case is about a woman born in 1977. In 2002 when she had an accident on her job. She was hit on her left lower leg. She was initially treated by Dermatology with antibiotics, and conventional gauze dressings. When the wound did not heal normally, patho-histological findings essentially ruled out livedo vasculitis. Corticosteroids and other immune-suppressants were then administered. This resulted in exacerbated left lower leg ulcers. During the next few years she was treated frequently with antibiotics, anticoagulant therapy, corticosteroids, and HBO.

In 2007 she suffered deterioration of the ulcers on her left lower leg plus appearance of a new ulcer of her right leg. She was again treated with corticosteroid and immunosuppressive drugs but this resulted in further deterioration of the ulcers. In September 2008 after finally being advised to have bilateral below the knee amputations, she came to our hospital's Department of Plastic Surgery. We did a full immunological screening. All results were negative. She had no general symptoms; only aggressively painful, necrotic ulcers on both lower legs.

We discontinued all corticosteroids and immunosuppressive drugs. We decided to conduct long term target antibiotic therapy. With biopsy we proved Pseudomonas aeruginosa. Several necrectomies and split skin grafts were done, along with NPWT.

At the end of 2009, we finally got results. Now, her right leg ulcer has completely healed. On the left is a small remaining ulcer that is healing well.

After 8 years of fighting with these ulcers the cause was never fully discovered.

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CASE REPORT: SECOND DEGREE BURNS TREATED WITH SOFT SILICONE COATED DRESSINGS

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[2]*AZ St-Elisabeth - Wound Centre (Zottegem, Belgium)*

Aim: Second degree burns are very painful wounds which may be required to be treated on a daily basis. Because of the risks of infection Silversulfadiazine is often used. This daily wound care regimen may cause a delay in wound healing and dressing removal causes pain to the patient. Using a non-adherent dressing for the treatment of such wounds ameliorates comfort/healing results of these burns and reduces the number of dressing changes.

Method: 15 second degree burns were treated with a soft silicone coated dressing. Different dressings were chosen depending upon the clinical challenge relating to the level of exudate. The primary end points of the study were based upon observations of comfort (pain) and the healing process. The wound healing process was documented with photographs taken throughout the treatment processs.

Results and discussion: Wound contact layers that transferred wound exudate were retained in place throughout treatment. Every patient demonstrated a decrease in pain sensation during wound care. These dressings provided a a favourable moist environment resulting in excellent healing. No infections were observed in any of the case studies.

Conclusion: Today advanced dressings are not required to be changed daily when being used to treat second degree burns. A single non adherent soft silicone coated dressing is sufficient aiding the wound healing process and providing greater comfort to the patient.

*Mepilex range -Mölnlycke

Case Study

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REGAINING THE TRUST OF A PATIENT AND HER FAMILY IN A PAINFUL WOUND CARE SITUATION

Erna Bachmann[1], Birgitte Santo[1].

[1]*Spitex Uznach - Gommiswald (Uznach, Switzerland)*

Introduction: A 78 year-old woman with diabetes, hypertension and arterial-insufficiency developed 11 necrotic lesions on her left lower leg resulting in 2 large almost circumferential ulcers. Vascular dilatation was performed followed by daily (excruciatingly painful) debridement with skingrafting as a goal.

The patient refused further treatment due to pain (pain-scores 10-out-of-10) and was sent home.

Aim:

- To find an acceptable treatment with emphasis on minimizing trauma and pain associated with dressing changes.
- To build up a trust between the patient and the home care nurses as she was in agony and petrified during dressing changes.

Method: Polymeric membrane dressings were chosen due to their pain relieving effect and ability to facilitate debridement. Dressings were initially changed daily and later 3xweek at the patient's home.

Results: The wounds were visibly cleaner with a pain score of 3 after five day's treatment, showed signs of healing after nine days and fully granulated by one month. Full closure achieved by seven months.

Discussion: Not only did the patient's pain diminish dramatically within the first week, we quickly regained the trust of the patient and her family whose involvement in the treatment had implications for the patient's entire well-being.

The time needed for dressing change and the total cost of dressing materials needed was reduced. Instead of spending 1,5 hours we only needed 30 minutes during dressing change. Total cost reduced by 40 EURO per dressing change.

Case Study

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SUPERABSORBENT WOUND DRESSINGS IN CLINICAL PRACTICE

Thomas Eberlein[1].

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Introduction: The level of exudation in management of wounds is an important point of decision. Exudation score 3 (uncontrolled exudation, Falanga 2000) is an existing challenge in wound management. Highest level of exudation can caused by different triggers: according to the microbial bioburden (in both critical colonised but also infected wounds); venous, venous-lymphatic or exclusive lymphatic disorders; cases of injured lymphatic vessels but also in wounds captured in an aggressive micro-milieu (Eming 2007).

Management is a domain for superabsorbent dressings. Typically they are based on derivatives of polyacrylic acid (PAA). Additionally such dressings are able to form topical milieu conditions actively by reducing the load of cytokines, proteases and radicals in vitro (Wiegand et al. 2009).

Methods: We report systematic experiences using a new superabsorbent dressing*.

A systematic multicentric comparison study was started using a new superabsorbent dressing* in comparison to an absorbent dressing without polyacrylic acid-based components**.

Results: A number of cases is finished. First experiences show the efficacy of superabsorber-containing dressings compared with conventional dressings.

Period of dressing change is longer in all cases. Peri-wound skin conditions are more stable due to reliable enclosure of exudate.

Conclusion: To handle heavy exudation levels in acute and chronic wounds is one step on the way to healing. Superabsorbent dressings seem to be an answer in cases of uncontrolled exudation.

Clinical results give relatively strong arguments to show an advantage in using such PAA dressings in comparison to conventional absorbent dressings.

* Vliwasorb®, Lohmann&Rauscher

** like Vliwazell®, Lohmann&Rauscher

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THE USE OF ALLOGENIC KERATINOCYTE ALLOGRAFTS IN HARD-TO-HEAL WOUNDS: A CASE REPORT

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[2]*Wound-Ex - Expertise Center of the University College Brussels (Brussels, Belgium)*
[3]*LabMCT - Skin- and Keratinocyte Bank - Burn Wound Center - Queen Astrid Military Hospital (Brussels, Belgium)*

Background: A female patient (47) with underestimated venous insufficiency (VI) and a 10-year old wound primarily caused by a dog bite (128 cm^2). The VI has been treated by poor administered compression therapy and all kinds of wound care products have been used to try to heal the wound. However, after full evaluation, applying adequate compression therapy and after using a standardized wound care protocol, the wound failed to heal. After eight weeks no progression was visible. Finally, we decided to use allogenic keratinocyte allografts.

Aim: Trigger the wound to heal and achieving full wound healing by using allografts.

Method: Day 1 we place the allografts into the wound and cover them with a foam dressing. The wound is cleaned, with a neutral wound cleanser. Day 5 we change the bandages and we remove the allograft carrier. We clean the wound with saline and a foam dressing is used. At day 8 we start treatment as described in the standard wound care protocol again. Day 15 = day 1. We continue this process until a significant improvement of wound healing is seen. This can take up to 6 to 8 applications. If no result appears or wound healing has improved significantly, treatment with allografts is stopped and standard wound care is continued.

Result: The wound improved and became smaller after a few applications.

Discussion: Allogenic keratinocytes are a powerful tool of treatment for hard to heal wounds, even when the underlying pathology doesn't respond to other treatment.

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SUCCESFUL TREATMENT OF A DIABETIC PLANTAR ULCER WITH THE COMBINATION OF TOPICAL NEGATIVE PRESSURE THERAPY AND LAVAGE TECHNIQUE

Gabor Szabad[1], **Judit Vasas**[1], Lajos Kemeny[1].

[1]*Medical University of Szeged, Department of Dermatology and Allergology (Szeged, Hungary)*

Diabetic plantar foot ulcers present a great challenge to wound care practitioners. This case report describes the application of topical negative pressure therapy in combination with lavage technique for the treatment of a diabetic plantar ulcer.

We report the case of a 67 year old female patient with a diabetic plantar ulcer under the right foot for over 2 years, presented to us with a thick callus in zones of support and a deep, cavity like mal perforant. During the years of previous treatment her left leg was amputated, and osteomyelitis was diagnosed several times in the right foot. We started treatment with the use of topical negative pressure therapy and lavage technique with antiseptic solutions. Mandatory proper off-loading was established with a diabetic walker system*.

With continuous off-loading and the combined topical negative pressure / lavage system the ulcer healed in just 3 weeks time. This case report provides insight into the multiple treatment modalities of trophic plantar ulcers, emphasizing the importance of off-loading and the role of modern wound healing techniques.

*Air-cast

Case Study

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AMPUTATION DUE TO BUERGER'S DISEASE, A CHALLENGING WOUND

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[1]*Dhali Community Geriatric Home (Dhali, Cyprus)*

Background: Buerger's disease, also known as thromboangiitis obliterans, is a chronic disease that causes insufficient blood flow to the hands and feet and mainly affects smokers.

A 36 year old male developed gangrene on two toes due to Berger disease. This eventually led to amputation of the entire right forefoot. Various dressings including topical negative pressure were used but the painful wound kept on deteriorating.

Aim: To save the foot from amputation by closing the wound that had been open for two years, and, to control the pain.

Method: Polymeric membrane dressings were chosen due to our previous successful experience with these dressings. The first few days the forefoot was cleansed prior to dressing changes in order to remove all iodine residues. Later dressing changes without additional cleansing were performed 2-3 times a week.

Results: The pain dropped from 9 to 3 after two days. It took about a week to see new granulation tissue as well as reepithelialising edges. After three weeks the patient didn't feel any pain at all. The wound closed in 5 months.

Discussion: These types of wounds are extremely painful and tend to progress especially if the patient s continue to smoke. In this case the patient stopped smoking when he had his amputation but the wound still deteriorated. The dramatic pain relief and the visible improvement seen at every dressing change were very motivating for the patient as well as the nurses.

Case Study

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TRAUMATIC LEG ULCER IN A PATIENT WITH A DERMATOLOGICAL PROBLEM

Cristina Miguéns[1].

[1]*C. s. Figueira da Foz (F. Foz, Portugal)*

Aim: Psoriasis is a dermatological problem which is characterized for lesions that are well-circumscribed plaques with an erythematous, scaly aspect which involves places like legs, knees, elbows and scalp.

This paper describes a case of a 75 years-old man with an exacerbated psoriasis in the lower limbs, who suffer a trauma in the femoral crest in medial right leg.

This resulted in a small ulcer that he starts to treat himself in home. 2 months later, he recurs to our services as he cannot tolerate the pain in the ulcer.

At this stage the wound is circular, superficial and with 4 cm^2, sloughy and with an inflammatory halo.

Patient refers severe pain (7-8 in Numeric Rating Scale) during dressing changes.

Material and methods: Treatment with a wound balancing matrix, cover with a hidropolymer dressing, changed every 4 days.

Results: The first outcome was an important reduce of the pain (3-4 in NRS) 2 weeks after starting the treatment

The closure of the wound was achieved in 38 days.

Conclusions: The wound balancing matrix reveals a good effect in pain management, and improves wound healing in compromised patients. The hydropolymer dressing has shown to be ideal to maintain a good moist wound healing environment, avoiding maceration and keeping the surrounding skin in good condition, despite the dermatological problem associated.

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A VERY OLD TREATMENT IN A VERY NEW FORMULATION

Cristina Miguéns[1], Fernanda Inglês[2], António Seco[2].

[1]*C. S. Figueira da Foz (F. Foz, Portugal)*
[2]*C. S. Pampilhosa da Serra (P. Serra, Portugal)*

Aim: Lymphoedema in the lower limb presents as persistent swelling confined to the legs.

Lymphatic and venous insufficiency coexists in some patients, influencing the ulcer healing.

Usually this pathology is associated with morbid obesity and immobility, sedentary lifestyle and lack of social support.

This paper describes a case of a young women (45 years old), with open ulcers in both legs for 8 years in the right leg and a recurrence of 8 months in the left leg, with edematous gross lower limbs, with several hospitalizations for E.V. antibiotics for cellulites.

Material and Methods: The wounds of the both legs are circular, cover with slough, very exudating, foul of odour.

Swabs were positive for Proteus Mirabilis.

Local management of the wounds and fragile surrounding skin include the application of a honey ointment, and change dressings every two days for 3 weeks.

Since this data started bandage application, with important reduced of oedema, and improved of the wound healing. Complete absence of signs of infection.

Maintain honey application, and dressing changes every 5 days.

Results: Complete wound healing in 8 weeks, with an important reduce of lower limb oedema (>50%).

Conclusion: Honey shows to be an effective option for infected wounds, even in complicated ulcers.

Case Study

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WHAT TO DO AFTER LIMB REPERFUSION, IN DIABETIC FOOT ULCERS?

Cristina Miguéns[1].

[1]*C. s. Figueira da Foz (F. Foz, Portugal)*

Aim: Lower-limb peripheral arterial occlusive disease (PAOD) is a major risk factor in diabetic foot disease.

The detection of significant arterial disease is vital to the prevention and treatment of foot disease.

This should help identify disease that is amenable to revascularization either by angioplasty or bypass.

After this procedure, in diabetic patients with diabetic ulcers, the primary goal is to achieve closure as quickly as possible.

This paper describes a case of a 75 year-old man, with a diabetic foot ulcer in the dorsum, after restore of the arterial perfusion by angioplasty, and the treatment options to achieve fast healing.

Material and Methods: The wound is circular, covered with slough, with scant exudates.

Local management includes application of a wound balancing matrix, pre moistened with saline, covered with a hidropolymer adhesive dressing.

Dressing changes occur every 3 days.

Results: Complete healing in 35 days, with a very good strength of the skin and without scar.

Conclusion: The wound balancing matrix shows to be an effective option to accelerate the closure of diabetic foot ulcers, preventing the risk of infection. The hydropolymer dressing has shown to be ideal to maintain a good moist wound healing environment, avoiding maceration and keeping the surrounding skin in good condition.

Case Study

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SAVE A LIMB TO SAVE A LIFE

Cristina Miguéns[1].

[1]*C. S. Figueira fda Foz (F. Foz, Portugal)*

Aim: The presence of coronary heart disease (CHD), associated with peripheral heart disease (PAD) has many times indication for revascularization procedures, but these have many risks of surgical site infection. Cardiac surgeons prefer prevent this risk, and patients with open wounds didn't have criteria for this procedure.

This paper describes a case of a 62 years old man, who's general health deteriorated over the last year and with diagnose of severe ischemic cardiac disease. There was urgent need for intervention, but due to an arterial ulcer open in the lower limb, that was refused by the cardiac surgeon.

The wound is in the left limb, below the knee, with regular edges and sloughy granulation tissue. Exudate was scant and the patient referred pain for all day (7 in Numeric Rating Scale- NRS), value reaching 10 at dressing change. It had an ABPI < 0, 7 and need of revascularization, not possible before cardiac procedure.

Material and Methods: Local management includes the application of a wound balancing matrix, covered with an hydropolymer dressing.

Conclusion: Complete healing of the wound was achieved within 30 days. During the treatment patient refer reduction of the pain - parameter was evaluated every dressing change. These results suggest that the wound balancing matrix is a good option for patient with compromised vascular ulcers. The patient are already been schedule for cardiac surgery and at the same time for lower limb revascularization.

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WOUND MANAGEMENT WITH FOAM WITH PHMB

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[2]*Diafit (Ljubljana, Slovenia)*

Aim: On chronic wound which not progress in healing in a lot of cases are uncontrolled growth of microbial. Different antimicrobial agents are on the possibility to use. We have tested a foam dressing with PHMB, to speed up healing rates of small group of non-healing wounds.

Material and Methods: In our case study there were included 5 female patients with venous leg ulcers who have their wound 5,2 years mean (up 1 to 6 years). Wound bed was in stage C3 (Falanga class.) and size was 24,44 cm^2 mean. Foam AMD with PHMB* changed every 3-4 days. The treatment last mean 44,7 days or until wound did not healed.

Results: One wound healed. The other were smaller and measurement at the end 17,69 cm^2 mean. The wound beds were in a stage A2.

Discussion: It seems that dressings with polyhexamethylen biguanide are one of the successful tools for accelerate the healing rates of non-healing wounds with control of microbial agents.

*Kendall AMD Antimicrobial Foam Dressing, Covidien

P 332

WOUND HEALING AND SKIN TEAR PREVENTION IN THE INTENSIVE CARE UNIT: A NOVEL APPROACH TO A CLINICAL CHALLENGE

Laura Teague[1].

[1]*St. Michael's Hospital (Toronto, Canada)*

Extremity skin tears are common in the ICU setting. In addition to age related skin changes, patients admitted to these units experience alterations in skin integrity due to volume overload (third space shifts, sepsis, etc) and medications to treat overwhelming medical conditions. Moreover, central and peripheral line insertions require careful anchoring, which can cause unavoidable skin tears. In our intensive care setting, category III skin tears are common.

Using principles of treatment for venous leg ulcers, the application of modified elastic compression (3 layers) to upper extremities has been employed to treat patients with multiple skin tears or large category III skin tears. Underlying arterial and multilumen venous catheter dressings as well as the local wound dressings where left in situ for 5-7 days. Wound closure occurred in all cases within 3 weeks of initiation of compression.

A case study demonstrating the technique of application of multilayer compression bandaging will be presented. Further quantitative study is warranted as this is a common and challenging problem, particularly in the intensive care setting.

Case Study

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WOUND CARE IN PLASTIC SURGERY: THERAPEUTICAL OPTIONS

Margarida Silva[1], **Diana Portela**[1].

[1]*Centro Hospitalar de Vila Nova Gaia (Porto, Portugal)*

Patients with skin graft present 2 critical areas with differents characteristics, but both with high risk of healing disruption – the graft and the donor site, the most frequent and severe complication is infection.

Aim: To show the evolution of 2 wounds of skin graft, after the application of PHMB solution and a silver alginate.

Methods: Using the case study model we will describe the evolution of both wounds.

Case 1 – an abdominal dehiscence after skin graft. The graft was rejected and the option was secondary healing. Main problems were: infection and heavy exsudate. Wound care was performed during 75 days without evolution.

Case 2 – an extended wound of the donor site on the upper arm. Main problems: infection, MRSA positive and no exsudate management. Wound care 60 days without healing.

Results: Case 1 – After change to PHMB and silver alginate dressing the woundcare was initial make from 3 to 3 days, after 2 weeks it was from 4 to 4 days. The healing was achieved after 58 days.

Case 2 – With the new option the dressing changes move from 2/ 2 days for 4/ 4 days. After 30 days 95% of the wound area was healed.

Conclusion: The use of PHMB and alginate silver dressing made possible the exsudate management and the reduction of the bacterial load and an evolution in the healing process, the dressing changes were also reduced. The results suggests that this option is more “cost-effective” that the traditional treatment.

Case Study

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THE TREATMENT OF A LYMPHEDEMA WITH THE HELP OF A 2 LAYER COMPRESSION SYSTEM – A CASE STUDY

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[1]*Wundambulatorium (Gettnau, Switzerland)*
[3]*Im Wundbogä*

Background: 68-year-old, male patient who vehemently refuses to see a physician and opposes the use of «chemical» therapeutics. Both lower legs are massively edematous and covered with pustules. In between discharge of smelly, yellowish exudates. Due to the demands of the patient, no further medical clarification and diagnostic analysis is possible. He only allows taking a wound smear, which merely indicates findings that are corresponding with the local wound situation. Restriction to appropriate local therapy.

Method: Beginning of the therapy (28. April): Wet-phase followed by mechanic cleansing. Skin care with LipoLotion followed by the application of a 2 layer compression system.

Interval of dressing change: two times a week.

Results: Merely by consistent and regular skin cleansing, skin care and the application of a 2 layer compression system the breadth of the calf of the right leg was reduced as follows:

Beginning of the treatment (28.04.09): B-breadth 27 cm; D-breadth 47 cm

Ending of the treatment (14.07.09): B-breadth 25 cm; D-breadth 38.5 cm

Conclusion: In spite of the difficult initial situation, the patient was persuaded by specific education to undergo a therapy which seemed reasonable to him and lead to a massive, if only temporarily local improvement of the situation on both lower legs.

P 335

SUCCESSFUL LOCAL TREATMENT OF A MULTIFACTORIAL VENOUS ULCER WITH THE HELP OF A 2 LAYER COMPRESSION SYSTEM – A CASE STUDY

Barbara Seitzinger-Mäder[1].

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Background: 79-year old patient with a multifactorial venous ulcer at the right lower leg; PAOD stage I, CVI stage II, diabetes mellitus Type 2, arterial hypertension, kidney insufficiency. Condition after angioplasty.

Due to lacking compliance and the consequential inconsistently performed compression therapy, a decrease in size was not achieved despite of an appropriate local treatment.

Method: Wet-dry phases with octenidin solution followed by cleansing with ring curette and tweezers. Protection of wound margins with crème*. Wound filling: wound protection lattice and hydrofibre. Wound dressing: polyacrylate superabsorbant polymer dressing. Compression therapy with a 2 layer compression system

Interval of dressing change: 3 times a week

Results: Within 7 months the size of the wound was reduced by 90%. The compression therapy was tolerated and consistently worn by the patient.

Conclusion: A consistently performed local therapy that was adjusted to the stage of exudation and the bacterial situation in combination with a 2 layer compression system, which enabled the patient to wear her own shoes, was in this case successful.

* Cavilon

P 336

HONEY + CLAY, A NEW ALTERNATIVE FOR BREAST CANCER WOUNDS?

Jean Marie Llabrès[1].

[1]*Hôptaux du Léman (Thonon les Bains, France)*

The evolution of breast cancer wounds has developed depending on the response to cancer treatment. Local treatment controls risks of hemorrhaging and infections and, above all, provides comfort, the primary objective.

The vegetal dressing promotes autolytic detersion with the honey and controls exudates and the bacterial ecosystem with the clay, whose natural odor limits odor problems.

Mrs. H., who has been suffering with breast cancer since 2006, had a mastectomy but did not react to chemotherapy. She is dying.

Her wound presents the following problems:
– She cannot bear to look at her own wounds which continue to spread.
– The slightest dressing, whatever it is, causes intense pain.
– The odor makes her nauseous.

Use of the vegetal dressing is simple.

Mrs. H cleans the wound herself after showering then carefully spreads the vegetal dressing in a thick 2 to 3 mm layer wearing a sterile glove on her hand. The treatment is topped with large sterile compresses then by absorbent dressings to limit the risk of trauma; a band around the thorax holds it all together.

The dressings must be changed daily for the first 3 days to assess proper tolerance; then they can be changed every 48 hours.

Mrs. H became radiant, suffered less, and appreciated the comfort and particularly the absence of foul odors. She socialized again!!

The treatment lasted 23 days until her death. She gained comfort and dignity at the end of her life.

The vegetal dressing offers a new alternative in the therapeutic arsenal of breast cancer wound treatment.”

Case Study

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SURGICAL SITE INFECTION FOLLOWING EXCISIONAL BIOPSY. RESULTS OF A MULTIMODAL TREATMENT IN A PATIENT SUFFERING FROM NON-HODGKIN LYMPHOMA (NHL)

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Medical history: A 68 years old man had a clinical diagnosis of left inguinal nodule with associated scrotal edema. Histology proven diagnosis of anaplastic large cell NHL after surgical excision was made.

Comorbility: obesity, dilatative cardiomiopathy, hypertension, COPD, cardiac failure.

Clinical features: scrotal-inguinal edema. Surgical Site Infection grade 2 at the inguinal wound. Medications: Levofloxacine 500 mg u.i.d., Metronidazole 500 mg t.i.d.

LAB: WBC 10.800 (80% neutrophils); Haemoglobin 16.4 g/dl, Plts. 168.000.

Imaging: CT scan of neck-abdomen-pelvis revealed bilateral inguinal enlarged nodes, mostly at the left side. Bone marrow biopsy did not show any tumour deposits.

Treatment: ACOD regimen - six cycles was carried out (from March to July 2009).

A week after the start of chemoterapy, patient began a nutraceutical treatment with oral supplementation* (2 doses/day: 14 g Glutamine, 14 g Arginine, 180 Kcal), continued for one month. Main results are summarized in table 1. Full recovery was obtained.

Conclusion: A serious surgical site infection in an immunocompromised patient has been successfully treated with a multimodal approach, combining targeted antibiotic therapy and nutraceutical support with Abound.

Table 1

	Basal	2nd	3rd	4th
Date	March 12 - 2009	March 19 - 2009	March 26 - 2009	April 2 - 2009
Patient weight (Kg)	117	115	115	110
Wound extension (cm): Lenght	2.5	2.5	2	2
Width	1.3	1	1	0.7
Albumin (g/dl)	3.6			4.1
Abound 2 doses/day	No	Yes	Yes	Stop

*Abound

Case Study

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WOUND ELECTROSTIMULATION, CLINICAL EXPERIMENTS

Jean-Paul Lembelembe[1].

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Aim: Successfully used for more than 3 years in Germany in healing wounds with delayed healing, it was interesting that some of our patients could benefit from this promising technique.

Method: First of all, for 2 months we evaluated the clinical interest of 5 patients with long term wounds and not showing improvement with conventional wound treatment. The wounds treated were mainly vascular wounds (4 venous or mixed ulcers) but also dermatological, like necrotic angiodermitis. The patients all gave their consent. The treatment was mainly assessed on its capacity level to accelerate cleaning and induce budding of previously atonic wounds.

Results: On the 5 wounds treated (3 illustrated here), cleaning was very good due to the almost immediate acceleration of local vascularization. The budding of the wound was observed each time after less than a week of treatment in wounds that had been atonic or torpid for several months or even several years. The treatment is easy to implement for health care providers. All patients noted a beneficial antalgic effect over the course of the sessions.

Conclusion: The first clinical data analyses indicate that electrotherapy is a promising, well-tolerated treatment constituting an interesting option for the treatment of persistent wounds. After this test phase, the treatment was adopted by the establishment.

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LIMB SALVAGE WITH TOPICAL WOUND OXYGEN* – TWO CASES OF COMPLEX WOUNDS IN MULTIMORBID PATIENTS AND IMMINENT MAJOR AMPUTATION

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[2]*AOTI Ltd (Galway, Ireland)*

Introduction: Patients suffering from chronic ischemic wounds often have multiple chronic conditions that impair wound healing. We present two cases we treated with a new therapy working with oxygen and cyclical pressure.

Methods and Results: topical wound oxygen* works with purified oxygen and pressure cycles between 5 and 50mbar to enhance the partial oxygen pressure in the wound tissue.

Case 1:
A 64 year old male patient had an autologous femoro-popliteal bypass surgery done 4 weeks prior to admission. We saw the patient with a complete necrosis of the skin on dorsal site of the foot. Surgical removal of necrosis and resection of compartment on back of foot as well as amputation of toes were performed. We continued therapy with negative pressure therapy (NPT) and intermittent topical wound oxygen* therapy. After skin grafting NPT and intermittent topical wound oxygen* therapy for 7 days was done. After stopping NPT, topical wound oxygen* treatment alone was for 10 days before dismissal home.

Case 2:
72 year old male diabetic patient with AVK developed a gangrenous forefoot. Prior to admission to surgical ward therapy with prostavasin was done. There were no possibilities to improve arterial vascular status via surgical procedures. A transmeta-tarsale amputation with repeated debridements was performed followed by negative pressure therapy and resesection of necrotic tissue. After 6 weeks of no further improvements we started with topical wound oxygen* for 6 days. The wound granulated well and we decided to skin graft followed by negative pressure and topical wound oxygen* therapy on days of dressing changes for 6 days. After 13 days of solely topical wound oxygen* the wound granulated well and the patient was dismissed to rehabilitation.

Conclusion: In these two complicated cases both associated with severe co morbidities topical wound oxygen* proved to be an valuable adjunctive therapy with good results in healing and more important to maintain the functional status by avoiding major amputation.

* TWO2, AOTI Ltd, Ireland

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CASE STUDY: TREATMENT OF A CHRONIC WOUND IN A PATIENT WITH TAKAYASU'S ARTERITIS WITH TOPICAL WOUND OXYGEN* IN OUT-PATIENT SETTING IN LATVIA

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[2]*Elvim Ltd. (Riga, Latvia)*

Introduction: The Takayasu's arteritis is an inflammatory disease with an unknown cause. It affects the aorta, the main blood vessel from the heart, as well as the blood vessels that attach to it. Females are about 8-9 times more likely to get it than males. People usually get the disease between 15 and 30 years of age. We report a case of Takayasu's arteritis in a 26 year old male patient who has already lost his right leg due to amputation. He has received an A. abdominalis prostetic as well as PTCA in 2003 due to myocardial infarction. The patient suffers from Hepatitis C as well as TBC since 2005. The wound on his left foot was heavily infected and MRSA positive.

Methods: The patient was treated daily with topical wound oxygen* therapy for 60 five times a week. Prior to each treatment, the patients wound dressings were removed and the wound bed was irrigated with a normal saline solution. The TWO* device delivered humidified medical grade oxygen at a cycling pressure between 5 and 50mbar. After each treatment patient received an advanced wound care dressing. Weekly assessments of the wound as well as pictures were taken to document the wound area, volume and changes in each from the previous assessment.

Results: The patient received 12 treatments of topical wound oxygen* in total. Ulcer dimension has decreased significantly to about 25% of the original wound size, the infections is stoped and the and ulcer has granulated nicely. Due to his multiple diseases that patient was no longer able to visit our center in the winter and had to stop treatment.

Conclusions: The speed of healing with topical wound oxygen* in this seldom arteritis was remarkable. Patients would benefit tremendously if a solution for home care would be available.

* TWO2

Case Study

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TOPICAL OXYGEN TREATMENT (TWO)* IN TWO CASES WITH PRESSURE ULCERS IN FINLAND

Aino Kivelä[1].

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Introduction: In spring 2009 I tried the TWO* therapy with two patients with spinal cord injuries caused by an accident. For the treatment I used the sacral patches designed for wounds at the trunk of the body. This system delivers humidified oxygen at a contious pressure of 30mbar to the wound bed. The required oxygen was obtained by an oxygen CE-Marked** for wound care. The course of treatment was 1 hour per day.

Case No 1:
A 26 year-old female patient with an entire spinal cord injury caused by a car accident. On the sacrum, above the cross bone, there was a II grade pressure (EPUAP) ulcer of size of 1,5 cm x 1,5 cm. The healing of the ulcer was stalled despite many different approaches of treatment. TWO* therapy was given once per 24 hours with duration of one hour. During the treatment the patient was in bed lying on his side. After the treatment the wound was of scarlet colour and “bloodish”. After nine days of treatment the maceration was vanished and the uneven/rough edges of the wound were tidy. The TWO* therapy was administered further to support the standard local treatment. The wound showed good granulation tissue after a few days. TWO* was continued for a period one month. During this time the wound did not close but showed very good granulation tissue as well as reduction in wound size and depth.

Patient Case No 2
A male patient with a partial spinal cord injury after being run over by a train. In the lower back was a re-opened post surgical wound that probably developed due to pressure. After starting TWO* the wound healed drastically quicker compared to the previously used treatment. Within 3 weeks the wound was closed.

Conclusion: TWO* seems to enhanced granulation, cleaning and healing of pressure ulcers. Administering the therapy does not require any skilled medical personal, but a trained wound care nurse should follow up the healing process.

*TWO2, AOTI Ltd, Ireland, **SeQual

Case Study

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FIRST EXPERIENCE IN THE TREATMENT OF CHRONIC VENOUS ULCERS WITH TOPICAL WOUND OXYGEN* IN OUT-PATIENT SETTING IN LATVIA

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[2]*Elvim Ltd. (Riga, Latvia)*

Aim: We want to share our first experience with topical wound oxygen* in Latvia using a topical oxygen chamber using cycling pressure as an additional method in the treatment of venous ulcers.

Methods: The patients were treated daily with topical wound oxygen* therapy for 60 five times a week. Prior to each treatment, the patients wound dressings were removed and the wound bed was irrigated with a normal saline solution. The topical wound oxygen* device delivered humidified medical grade oxygen at a cycling pressure between 5 and 50mbar. After each treatment patient received compression stockings of the 2nd functional class or short-stretch compression bandage. Weekly assessments of the wound as well as pictures were taken to document the wound area, volume and changes in each from the previous assessment.

Results: We treated 8 patients in total. Four patients with chronic atrophic ulcers of venous aetiology completed treatment with a full ulcer epithelisation (number of treatments - from 13 to 21). Four additional patients with venous ulcers are still receiving treatment as not all patients started at the same time. These patients received 8 to 13 treatments so far and all show good progression of the wound.

Conclusions: First experience of using topical wound oxygen* is very positive. Patients with severe venous ulcers benefit from treatment with topical wound oxygen* and show remarkable wound closure rates.

*TWO2

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TREATMENT OF ETIOLOGICALLY DIFFERENT CHRONIC WOUNDS WITH THE BI-LAYERED HUMAN SKIN EQUIVALENT* AFTER ITS RECENT RE-INTRODUCTION IN SWITZERLAND – CLINICAL EXPERIENCE IN INDIVIDUAL CASES FAILING TO RESPOND TO CONVENTIONAL THERAPY

Andreas Arnold[1], Jan Izakovic[2], Peter Itin[1].

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[2]*Private Praxis (Basel, Switzerland)*

After its reintroduction in Switzerland in 2006 we have treated over 40 patients of 41 to 93 years of age with one or more applications of the bi-layered human skin equivalent* for the following types of wounds: venous, arterial, mixed arterio-venous, vasculitic and vasoocclusive leg ulcers; traumatic leg ulcer in an i/v drug abuser; dystrophic epidermolysis bullosa and pyoderma gangrenosum.

Our presentation will summarize exemplarily 5 patient's medical histories, wound characteristics, the pre- and post-application phases and the different outcomes and will include photodocumentation.

The bi-layered human skin equivalent* has been approved by the FDA in 1998 and in Switzerland by BAG as the world's first bi-layered human skin equivalent and first tissue engineered living organ for the treatment of chronic wounds that have not adequately responded to conventional therapy.

The two layers of the bi-layered human skin equivalent*, as in regular skin, make it effective in speeding up wound healing by secondary intention and achieving healing in wounds previously unresponsive to treatment.

As of August 1, 2008 treatment costs are fully reimbursed for the treatment of chronic, poorly healing ulcers and for the treatment of soft tissue defects.

* Apligraf® (Organogenesis Inc., U.S.A.)

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THERAPY OF A SEPTIC FOREFOOT PHLEGMONE WITH TOPICAL WOUND OXYGEN* IN AN INTENSIVE CARE SETTING: A CASE REPORT

Helmut Adler[1], Christian Frye[2].

[1]*Klinikum Forchheim (Forchheim, Germany)*
[2]*AOTI Ltd. (Galway, Ireland)*

Introduction: This is a case study of a 59-year old patient who was admitted to our hospital due to progressively deteriorating condition and no appetite. The patient had a hemiparesis on his left side due to a meningitis as a child as well as a general exanthema due to an allergic reaction on antibiotic treatment. Laboratory analyses revealed significant signs of infection. The patient developed a forefoot phlegmone that started from a venous ulcer at his right inner leg that had been there since years. Rapidly the patient developed a sepsis that made intermittent ventilation as well as dialyses and high dose catecholamines necessary. The ventral muscle compartments of the forefoot were incised followed by an open wound therapy for 4 weeks. As laboratory infections signs started to increase again, the wound was revised followed by 4 weeks of Negative Pressure Treatment (NPT). The lower leg had a significant edema at this point. The wound has granulated well but showed a great deal of sludge. Wound healing had stalled with no further signs of epitheliasation. Therefore we started topical wound oxygen* therapy at a duration of 3-6 hours per day 8 Week after the first surgery. Even though massive substitution of liquids was still necessary the edema of the lower leg and the foot was reduced remarkably. The wound epithelialised quickly. The venous ulcer at the lower leg that was responsible for the sepsis healed within 30 days during intensive care. The incision on the foot showed good granulation. In total the patient spent 14 weeks in intensive care! The patient was dismissed from intensive care in a center of neurologic rehabilitation.

Conclusion: In an intensive care setting the administration of topical wound oxygen* is well tolerated. It promotes excellent healing in complex wounds and seem to be a valuable adjunctive therapy.

*TWO2

Case Study

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DIFFERENT CHALLENGES, ONE SOLUTION

Melanie Hucker[1].

[1]*Northern Devon Healthcare Trust, North Devon District Hospital (Devon, United Kingdom)*

Introduction: There are many factors which can prolong healing in complex and challenging wounds. Clinicians need to be competent and skilled in undertaking a complete holistic assessment to determine the underlying pathology and identify patient and wound-related factors, in addition to selecting a wound care product which can address some of the underlying barriers to healing.

Method: foam dressing containing 0.5% polyhexamethylene biguanide (PHMB)* was evaluated on 6 patients who were referred to the Tissue Viability Service with complex wounds. The patients were monitored closely by both the Specialist and General Nurses, and the wound progress was documented and photographed. The wounds included difficult to heal venous leg ulcers, and wounds resulting from trauma, surgery and secondary to a dermatological condition.

Results: All wounds progressed well during the evaluation period. The dressing was observed to have managed exudate effectively, be easy to use, and the patients found it comfortable in situ on the wound. Clinicians using the product observed that the dressing adapted well to managing both low and high levels of exudate. An additional benefit was that the condition of the peri-wound skin improved in some of the patients on which it was evaluated.

Conclusion: The dressing performed well on this small sample of patients representating some of the many different types of wounds that are managed on a day to day basis by clinicians in both the hospital and primary care settings.

*Kendall™AMD antimicrobial foam dressing

This evaluation was sponsored by Tyco Healthcare Group LP d/b/a Covidien, Mansfield, MA, 02048, USA.

Case Study

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ELECTROSTIMULATION: AN INTERESTING METHOD FOR HEALING

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Aim: Detersion, the primary phase before considering epidermization, is often difficult to obtain and can sometimes require expensive or surgical methods. We wanted to evaluate electrostimulation.

Method: In this prospective study, we selected patients hospitalized for chronic leg ulcers developing for more than 6 months, in which healing has been delayed despite detersion with a curette and for which the granulation tissues represent more than 50% of the wound and for which we applied electrostimulation. The parameters studied were the fibrin percentage, the ulcer dimensions and pain (EVA).

Results: 3 patients, between 77 and 85 years of age were included in this study. One had a venous ulcer and the two others had a mixed ulcer that was predominantly venous. The ulcers initially measured 44.75 cm2, 76.5 cm2 and 109.5 cm2, fibrinous at 90%, 60% and 71%. At the end of 21 days, reduction in the size of the ulcer was respectively 48%, 70% and 54%; the fibrinous tissue represented 20%, 30% and 15%. The initial EVA was respectively 6/10, 5/10, 7/10 and on Day 14 4/10, 2/10, 2/10.

Conclusion: In our study, for ulcers in which healing is delayed, we observed detersion and rapid reduction in wound size, without pain. The tingling sensation was not a problem for the patients. This method seemed very appealing to promote the atraumatic detersion of wounds, as well as to stimulate granulation tissue and epidermization.

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PREVENTING DECUBITUS ULCERS, THE ROLE OF NUTRITION IN A CLINICAL CASE

Josiane Jetzer[1, 2], Nadia Donnat[2, 3, 4], Hubert Vuagnat[2, 4].

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[2]*Wound care group, Geneva university hospitals (Geneva, Switzerland)*
[3]*Nursing directorate, Geneva university hospitals (Geneva, Switzerland)*
[4]*Continuous care service, Department of rehabilitation and geriatric's, Geneva university hospitals (Geneva, Switzerland)*

The goal of this poster is to offer a clinical follow-up diagram and nutrition guide through a clinical case.

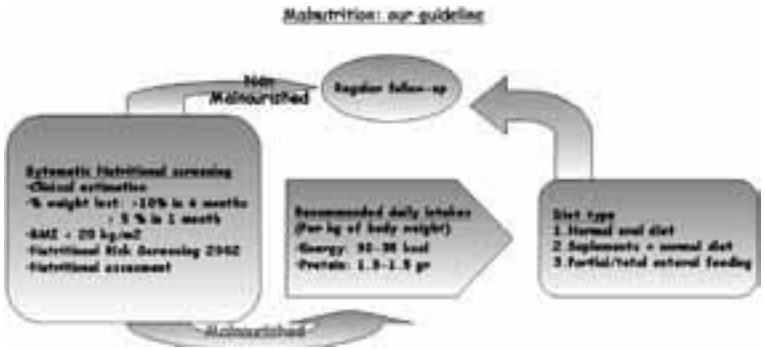
Following an intervention for cervical spinal stenosis, an 83 year old patient with sensitive-motor paralysis at C5. Despite slight recovery and more than 3 months of intensive therapy, their functional progress has weakened.

Transferred from a long term treatment center, one observed upon their admission a cutaneous frailty, multiple stage 1 bedsores (Norton 10/20) and severe malnutrition.

By following the directives established in the department, enteral feeding by catheter was carried out for 8 weeks at the end of which all of the redness had disappeared (Norton 20/20).

The functional capacities increasing reeducation for walking may be made with success.

In conclusion, nutrition can play a crucial role in wound prevention and readaptation; the clinician must be able to use specific but simple tools to optimize their treatment.



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SALVAGE OF COMPLEX BKA STUMP HEALING FAILURE WITH HYPERBARIC OXYGEN AND MULTIDISCIPLINARY CARE

Bradley B. Bailey[1], Roger B. Schechter[1].

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A 57 year old smoking Type II diabetic, obese, but protein deficient construction supervisor with severe PAD experienced failure of proximal right leg angioplasty. He underwent subsequent femoral tibial bypass that clotted due to hypercoaguablility mediated by anti-phospholipin 3 antibody. After thrombectomy, successful restoration of graft patency was demonstrated. Nevertheless, gangrene developed to mid-calf, and the incision for the distal (tibial) anastamosis was non-healing, necrotic and profoundly edematous. As such, the patient was considered for AK amputation.

The patient requested attempted preservation of the limb at BK level to allow for future ambulation with prosthesis. After smoking cessation, strict glycemic control, protein supplementation, anabolic steroid administration, and anti-coagulation therapy, the proximal tibial wound demonstrated development of granulation tissue after two weeks of vacuum assisted closure therapy. The patient then underwent BKA and subsequent Hyperbaric treatments. The stump wound dehisced creating a large defect requiring extensive repeated debridements and further vacuum assisted closure therapy, simultaneous with the HBOT. After complete granulation, STSG's were applied with "take" augmented by vacuum assisted closure device installed over the grafts and left in place five days. HBOT continued for ten post-operative treatments. Graft take was 95%. Residual open areas were treated with Iodosorb every other day and debridement, with subsequent further closure. The patient is currently undergoing fitting of a BK prosthesis.

This case represents a prime example of the potential enhancement of outcome that can be brought about by the comprehensive multidisciplinary team approach to wound care and hyperbaric medicine.

Case Study

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DEBRIDEMENT OF A NECROTIC DIABETIC FOOT ULCER USING HYDROTHERAPY, A CASE STUDY

DEBRIDEMENT OF A NECROTIC DIABETIC FOOT ULCER USING HYDROTHERAPY, A CASE STUDY

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Background: Hydro-debridement is a new specialised system that is aimed at debriding complex wounds at the bedside. Debridement of necrotic tissue in a diabetic foot ulcer is of paramount importance due to the high risk of gangrene and amputation.

Aim: To present a case study of an individual with an extensive necrotic diabetic foot ulcer requiring surgical debridement with the hydro-debridement system.

Method: This case involves a 39 year old patient with a 20 year history of diabetes mellitus. He presented to the diabetic day centre with a small necrotic ulcer on his distal left big toe which rapidly deteriorated to encompass his entire fore foot. The wound measured approximately 12x3 cm with 100% thick fibrinous yellow sloughy tissue with two remaining necrotic digits. The patient refused surgical debridement in theatre. The decision to debride with hydro-debridement was made in collaboration with the patient and multi-disciplinary team.

Results: The patient required two debridement sessions occurring at the bedside in February 2009.Each session took approximately 20 minutes, resulting in an 80% decrease in sloughy tissue. The wound was dressed with topical negative pressure and reviewed on a weekly basis. Off loading was achieved with a casting tape*. Complete wound healing occurred by June 2009.

Conclusion: Debridement is essential in diabetic foot ulcers. The use of the Hydro debridement was a successful tool in debriding this wound. The tool is quick, easy to utilise, and can operate at the bedside with minimum personnel, saving Operating Theatre time and resources.

* Scotch cast

Case Study

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CASE REPORT: SUCCESSFUL TREATMENT OF SEVERE BURN WOUNDS USING HBOT (HYPERBARIC OXYGEN THERAPY) AND SKIN SUBSTITUTES, WITHOUT AUTOLOGOUS SKIN GRAFTING

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According to the American Burn Association 2007 fact sheet, the number of burn injuries receiving medical treatment have amounted to 500,000 cases, 40,000 hospitalizations and 4,000 deaths. In our out-patient wound care center in Los Angeles, CA, burn wounds are common in the two extremes of age, infants and the elderly.

Traditionally, severe burn wounds, beyond 3rd degree, are admitted and treated as in-patint using autologous skin graft to replace the loss of full-thickness skin after the surgical excision of damaged tissue (escharotomy). Most of the patients seen in our wound care center are seniors over 70 years old with less-than-ideal skin integrity. This demographic often fails as a viable source of autologous skin graft harvesting.

In recent years, there has been remarkable progress in the development of “skin substitutes,” commercially available collagen sources of artificial “skin-like materials,” used in place of autologous skin graft. These “skin substitutes” have eliminated the burden of large skin graft harvesting, which may require hospitalization with the associated morbidities, such as pain, infection, and additional wound care. Combining HBOT (Hyperbaric Oxygen Therapy) and other adjunctive wound therapies, it is now possible to achieve complete healing of severe wounds without autologous skin grafts.

Here, we present one unique “limb salvage” case of severe lower extremity burn wounds that was successfully treated on an out-patient basis, using the combination of meticulous local wound care, HBO, applications of skin substitutes, and TNP* therapy.

* VAC therapy

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MANAGEMENT OF A CATEGORY 4 PRESSURE ULCER ON A CRITICALLY ILL PATIENT FOLLOWING SURGERY FOR A PAROTID ADENOMA USING A MULTIDISCIPLINARY APPROACH TO MODERN WOUND CARE WITH HYDROFIBER DRESSING TECHNOLOGY

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Aim: Preventing and treating pressure ulcers in the United Kingdom has been estimated to cost the NHS between £180-£321 million equating to 0.4-0.8% of health spending, (Touch R.1993). East Kent Hospitals University NHS Foundation Trust has invested significantly to reduce these risks with implementation of a revised wound care formulary, pressure relieving equipment and focus on staff training to improve patient outcomes.

Methods: This case study examines the challenges of managing a patient following radical surgery which left him immobilised. He developed bacteraemia which was attributed to his compromised auto-immune state complicated by a category 4 pressure ulcer, (EPUAP 2009). This caused considerable distress from pain, exudate and malodour.

Results: With a patient centred approach, this gentleman made a remarkable recovery with appropriate conservative sharp debridement, antibiotic therapy, modern wound dressings, pressure relieving equipment and nutritional support. Following rehabilitation, he returned to his own home and his sacral ulcer has now completely healed.

Conclusions: This patient faced many challenges during his admission. The tissue viability team implemented a cost effective care plan utilising conservative debridement techniques including modern dressings of a hydrofiber antimicrobial dressing in combination with a gelling foam dressing. Dressings do not heal wounds but used effectively as part of a care plan can make a difference to a patient's quality of life.

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CHALLENGING THE HABITUAL USE OF THE 4 LAYER BANDAGE

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Aim: Patient education and empowerment are essential components in effective treatment. This is well documented in the treatment of leg ulcers.[1] Many patients struggle to cope with 4 layer bandage systems due to issues with footwear and irritation/ allergy from the wool layer.[2]

The aim of this case study was to investigate the use of a 2 layer compression system which might overcome allergy, mobility and footwear issues.

Mrs M was referred to the Tissue Viability service with bilateral venous leg ulcers. She was a very active lady who had previously been treated with 4 layer bandages. She had refused this continuing treatment due to allergy to the wool layer, footwear issues and reduced ankle mobility when driving.

Method: After full assessment and comprehensive discussion with the patient, it was decided to try a 2 layer compression system that used foam as the first layer rather than wool. The 2 layer system was applied on a weekly basis with a non adherent dressing, according to manufacturer's instructions. The wound dimensions and limbs were measured at each visit.

Result: Mrs M showed quick and continual improvement in healing and marked reduction in oedema levels. She had no adverse reaction to the components, was able to wear normal footwear and continued to drive and partake in all normal activities.

Conclusion: Patients should be offered a choice in compression therapy appropriate to their individual needs to ensure the best possible outcomes and increased concordance.

[1, 2] References not available in abstract book

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THE WELSH WOUND NETWORK: FIRST STEPS TOWARDS NATIONAL REPORTING OF THE OCCURRENCE OF PRESSURE ULCERS

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Wound healing employs around 1600 people in Wales with a commercial turnover in excess of £70 million annually and a research income over £1.5 million. The total spend on wound healing in Wales is likely to be around £156 million annually. Given the economic impact of wounds in Wales the Welsh Assembly Government has provided funding to support a Welsh Wound Network (WWN) to co-ordinate contacts between academics, clinicians and the commercial sector to maximise the potential for effective collaboration. A series of open meetings has facilitated communication and helps to ensure that all participants in Wales are represented.

One starting point has been to assist the All-Wales Tissue Viability Nurses Forum to design and execute pressure ulcer prevalence surveys across orthopaedic units and community hospitals in Wales. This is an example of a concrete project conducted on an All-Wales basis. Data was gathered upon 1196 patients (581, 48.6% within orthopaedic units with 615 located in community hospitals). Of these 81 (13.9%) and 162 (26.7%) had pressure ulcers in orthopaedic and community hospitals respectively. Severe (category III and IV) pressure ulcers affected 78 patients (19 in orthopaedic units and 59 in community hospitals). Establishing robust data upon wound occurrence provides a platform against which future wound healing initiatives in Wales can be judged.

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TELE WOUND CARE-A NEW MODALITY OF TREATMENT FOR PATIENTS IN REMOTED AREAS

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Aim: Provide the highest quality wound healing advice to healthcare practitioners and patients at remote places through a collaborative plan of care that uses the latest telecommunication networks.

Methods: Many patients have complex wounds that require an expert's opinion that will take lengthy process with referral to the hospital and then an extended waiting for appointments. The expert's clinic may be a long distance away and may receive inconsistent advice.TELE WOUND CARE SOLUTIONS at community settings aims to give an effective plan of treatment for the primary healthcare practitioners and the patient in remote areas. The consultment is carried out through an internet communication connected to a large screen with high resolution and audio settings. It allows the specialists to enlarge the photo image to view precise details of the wound tissue.

This internet video conference is carried out by multidisciplinary team of healthcares.

Performing a multicenter & multidisciplinary internet team requires a lot of coordination with all of the experts who are relevant for the treatment.

Results: Telemedicine patient consultations are carried out within 24-48 hours instead of waiting 2-4 weeks for an expert appointment.

Enhance the quality of life for patients through shortening the duration of wound healing.

Conclusions: This model gives us an easy access for support Healthcare professionals, Enhance patient outcomes and prevent unnecessary hospital admission and transportation cost for the patient so therefore is very cost effective for both sides –the HMO and the patient.

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WOUNDPEDIA: DEVELOPING CONSENSUS ON JUST-IN-TIME EVIDENCE BASED RECOMMENDATIONS FOR WOUND PAIN MANAGEMENT

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Aim: To facilitate dissemination of the guidelines and knowledge transfer, the Woundpedia is established to provide succinct just-in-time information that is easy to access and web-based. The purpose of presentation will describe the process through which the pain related information is revised and updated based on feedback from international clinicians.

Method: A panel of international wound experts were identified and assembled to generate clinical recommendations for practice. Draft statements were developed based on the scientific evidence in the literature and expert opinion.

Drafted statements were sent to 60 international wound care clinicians for feedback using a web-based methodology. They were asked to rate the statements with one of 4 anchors: strongly agree, somewhat agree, somewhat disagree and strongly disagree based on scientific merit and expert opinion. If any of the items did not receive an 80% agreement rating, the statements were adjusted based on the participant's comments.

Conclusion: Woundpedia provides just in time information that is based on evidence and feedback from international experts. We describe a sound and scientific process that combines experimental evidence with expert opinion and patient preference to establish the foundation of evidence based (informed) medicine.

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DECUBITUS SCALES IN COMPARISON

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The chronic wound decubitus is considered to be an important indicator for nursing quality within an institution. Currently the decubitus prevalence of risk patients is 9.3% (Charité 2008). In the context of wound treatment, decubitus patients are most often treated by professional nursing staff (Panfil 2007). Even though the responsibility for the therapy lies within the scope of the physician, nursing services expand their area of responsibility in wound treatment by qualifications such as WAcert and WTcert in the course of professionalization. Regardless of this, the documentation of a decubitus and its scale division appertains to the area of responsibilities of professional nurses.

Since Shea published the first classification system for decubitus in 1975, a wide range of decubitus scales have been developed. In a systematically carried out literature analysis Panfil found 20 different systems (Panfil 2007). The classification systems considerably vary in the number of stages and in the stage definitions. Taking this into account, it is essential to use the particular system consciously and transparent in order to ensure a flawless and correct communication in decubitus therapy.

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BODERLINE DISORDER AND AUTOMUTULATION, THE APPEARANCE OF WOUNDS AND HOW TO COPE WITH THESE GROUP OF PATIENTS

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Background: Clients who are institutionalised in a psychiatric hospital and are diagnosed with borderline disorder, often hurt themselves by cutting or burningwounds.

Purpose: Give a tool how to cope with automutulating clients

Methods: A written patientinformation folder for nurses and docters working in a emergency ward.

Conclusion: These group is prejudiced by nurses and docters working in the regular medical hospitals. A folder can create some understanding in the behaviour of these patients which can lead to a qualitative improvement of treatment for these patients.

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THE SURGICAL DRESSING MANUFACTURERS ASSOCIATION (SDMA) CORE CURRICULUM FOR WOUND CARE

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The Surgical Dressing Manufacturers Association (SDMA) has as members the majority of manufacturers of surgical dressings supplying the UK health care market.

This project is a unique example of industry and clinicians working together to improve standards of practice.

In order to meet their core aims the SDMA proposed the setting of a minimum standard of wound care education for all staff of its member companies to ensure that they had a minimum level of knowledge allowing them to communicate with the health care professionals they regularly engaged with in a business-like and professional manner. The training and education team have developed a core curriculum which all companies can follow. This was proposed as a way of allowing companies of widely differing sizes flexibility in meeting the same aims and learning outcomes. The content is divided into compulsory and optional components, to reflect the wide range of products manufactured and sold. Compulsory components include:
Anatomy and physiology of wounds
Factors affecting wound healing
Classification and assessment of wounds
Formularies
Objective setting
Overview of acute and chronic wounds
SDMA Code of Practice (SDMA 2009).

A workbook and a generic training package has also been developed. All SDMA member companies have participated in the provision of resources for this, sharing existing presentations and illustrations.

Following completion of the educational programme staff will be required to sit an electronic examination. Successful candidates would be awarded a certificate and their performance recorded on an SDMA database.

*SDMA (2009) SDMA Code of Practice for promotion of surgical dressings to healthcare professionals www.sdma.org.uk/contents.html

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NURSE CONSULTATION PROJECT: MONITORING CHRONIC WOUNDS

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Our healthcare system evolves from day to day, it is sufficient to lean on the profusion of articles, reports, and experiments to observe that this evolution, among others towards a potential task and skill transfer, is only in its first steps when compared to the Anglo-Saxon model of treatment. The beginning of the reflection began in 2003 with doyen Yvon Berland's report which made the following observations: inefficient medical demography, aging of the population, an increase in the demand for treatment and a decrease in hospital duration with repercussions on the ambulatory sector. How do we prepare for these problems to avoid medical desertification and maintain a satisfying and quality offer of treatment? The transfer of tasks and skills is an eventuality that obviously requires conditions such as skill validation and supplementary College education. Interests of such a consultation: dispose of a wound and healing referent in a closed geographical sector, with an outlying hospital and overwhelmed specialists, the improvement of chronic wound treatment in terms of healing and treatment costs. And when the nurse consultation is validated with a key nomenclature letter to avoid the anarchical proliferation of consultations, while the structure itself is not recognized?

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GOOD SKIN CARE? YES WE CAN

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Aim: In order to organize in the best way the skin care management in our Institute, we identify a failure in planning, with different steps: assessments, treatments, goals, failure in communicate, patient-to-staff, staff-to-staff, staff-to-physician, and failure to recognize a problem. To follow the JCI standard and to reduce the incidence of skin care lesions by 28% and also:
– educate and involve all the staff
– improve the quality of care delivered

Methods: We created a specific policy to provide guidelines for the prevention and management of the skin care issues and we created an on-line mandatory course for nurses. The course organization has five sections that have to be completed before apply the final test. The test is a multi-choice answer test. All the nurses staff has one month to complete the test with more than the 80% of right answers.

Results: All the nurses did the test in less than one month. We evaluated the educational role in the clinical activity after 3 and 6 months, the first evaluation shows that the skin care lesions have been reduced by the 10%; in the second one we had the same result.

Conclusions: The skin care policy implementation, if supported with a good educational strategy, determinate a good participation to the staff members and improve the quality of care delivered.

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FALLS! – IMPACTS! – HEMATOMAS?

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Falls in the elderly are frequent and result in hospitalizations. The bone consequences are well-known, but soft tissues suffer as well. The “dissecting hematoma” entity has been focused on by the Geneva dermatology team these past few years[1]. As consulting nurses in dermatology and plastic surgery in the Rehabilitation and Geriatrics Department of University Hospitals in Geneva (HUG), we are confronted with this problem. We are presenting our experience.

Aims: Sensitize professionals on the repercussions of post-fall hematomas and inform them of the correct actions to follow.

Discussion: The number of counted cases per year requiring drainage by a dermatologist and/or plastic surgeon is significant. The frequency and severity of these hematomas require a serious monitoring and sometimes an extension in hospitalizations. The post-drainage surveillance is significant and the clinical specialist nurse (CSN) in wound treatment, the link between the specialized consultants and medical units, inform the healthcare providers. Currently, we are observing a deficiency in the post-fall hematoma assessment and a minimization by the medical personnel. The treatment is multidisciplinary and must be precocious in prevention. Our geriatrics hospital thus implemented a systematic notification – summary of falls, decision-making branch used by the doctors and their team – sensitizing the medical teams and standardizing monitoring.

1 - Kaya G et al: deep dissecting hematomas: an emerging severe complication of dermatoporosis. Arch Dermatol 2008.

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ASSESSMENT INSTRUMENTS FOR THE RISK ASSESSMENT AND CLASSIFICATION OF INCONTINENCE-ASSOCIATED DERMATITIS (IAD) FOR NURSING PRACTICE

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Background: Patients with incontinence are vulnerable to suffering from an incontinence-associated dermatitis (IAD). Instruments for the assessment of the perineal skin can help the nursing staff with the determination of the individual risk of an incontinence-associated dermatitis.

Method: The systematic literature research was conducted in the Medline, Academic Search Elite, CareLit, GEROLIT, DIMDI, CINAHL and EMBASE databases. The literature research was a multi-stage, iterative process.

Result: Four instruments in English language for the risk assessment and classification of IAD could be identified.

Author (Year) Country	Instrument	Type of instrument
Nix D.H. (2002), USA	Perineal Assessment Tool (PAT)	Risk assessment of IAD*
Brown D.S. & Sears M. (1993) USA	Perirectal Skin Assessment Tool (PSAT)	Classification of IAD
Kennedy K.L.& Lutz J. (1996) USA	Skin Assessment Tool	Classification of IAD
Junkin J. (2008), USA	Incontinence-Associated Dermatitis Intervention Tool, (IADIT)	Risk assessment & classification of IAD

In the German-speaking area, however, no instruments for the risk assessment or classification of IAD can be found. A closer analysis of the four English instruments showed that they were not or only partly tested for their validity and reliability.

Conclusion: The nursing staff must be sensitised to the risk and to the presence of an IAD in incontinent patients so that they can differentiate between IAD and other skin irritations (e.g. decubitus ulcers). Within the framework of an Austrian study, the Perineal Assessment Tool (PAT) and the Incontinence-Associated Dermatitis Intervention Tool (IADIT) are being translated from English into German according to the principles of the International Society of Pharmacoeconomics and Outcomes Research (ISPOR). Afterwards, the instruments will be tested for their content validity and for their interrater reliability respectively.

AUTHOR INDEX

Bold = presenting author